412

J. B. LIPPINCOTT & CO., No. 715 and 717 Market Street, Philadelphia, announce that they have recently published the Fourth Decennial Revision of the United States Pharmacopœia by authority of the National Convention for revising the Pharmacopœia held at Washington, A. D. 1860, and would refer to the following Resolution of the American Pharmaceutical Association, passed at their Annual Meeting in Baltimore, September, 1863.

"*Resolved*, That the late edition of the U. S. Pharmacopœia, issued by the Committee of Revision and Publication appointed in Washington in 1860 meets the warm approval of this Association, and we commend it to the universal acceptance of the Physicians and Pharmaceutists of the United States, and will use our individual efforts to give it currency and to enforce its authority as the standard of practice throughout the country."

412

PROCEEDINGS

OF THE

AMERICAN PHARMACEUTICAL ASSOCIATION.

Med

25

PROCEEDINGS

OF THE

American Pharmaceutical Association

AT ITS

ELEVENTH ANNUAL MEETING,

HELD IN

BALTIMORE, MD.,

SEPTEMBER, 1863.

ALSO, THE

CONSTITUTION AND ROLL OF MEMBERS.

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PHILADELPHIA:
MERRIHEW & THOMPSON, PRINTERS,
No. 243 Arch Street.
1863.

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1863

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1863–64.

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John M. Maisch,	Philadelphia,	1862–63
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STANDING AND PERMANENT COMMITTEES

OF THE

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COMMITTEES

TO REPORT AT THE ANNUAL MEETING IN SEPTEMBER, 1864.

COMMITTEE ON SCIENTIFIC QUERIES.

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N. Hynson Jennings,	Baltimore, Md.
Richard H. Stabler,	Alexandria, Va.
James T. Shinn,	Philadelphia, Pa.

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Edward R. Squibb, *Chairman*,	Brooklyn, N. Y.
Joseph Roberts,	Baltimore, Md.
W. J. M. Gordon,	Cincinnati, O.

COMMITTEE ON ELECTION OF MEMBERS, AND ON CERTIFICATE OF MEMBERSHIP.

Edward Parrish, *Chairman*,	Philadelphia, Pa.
John Meakim,	New York City.
James Balmer,	Baltimore, Md.

SUBJECTS FOR PRIZES

OPEN TO GENERAL COMPETITION,

The awards to be determined and adjudged by a Committee to be appointed at the meeting in 1864, agreeably to a Resolution of the Association, adopted August 29th, 1862. (See Proceedings for 1862, vol. X., pages 47, 48.)

1. An Essay on Cimicifuga racemosa in its Chemical and Pharmaceutical Relations and Medicinal Uses.
2. An Essay based on a Practical and successful Experiment on the Culture and Preparation of Elaterium in the United States, accompanied by a specimen of the Product, of not less than 120 grains.

CONTENTS.

Prefatory Note.. 15
Minutes of the Eleventh Annual Meeting........................... 19
Report of the Executive Committee.................................. 22
Annual Report of President Procter...... 26
Report of the Committee on Nominations.......................... 31
Address of President Moore on assuming the Chair............... 32
Report of the Treasurer.. 32
Report on the Progress of Pharmacy, read........................... 34
Report on the Drug Market, read....................................... 34
Report on Scientific Queries, read..................................... 34
Report of the Auditing Committee on the Treasurer's Account... 35
Committee on Sale of Poisons discontinued.......................... 35
Corresponding Secretary authorized to procure Foreign Periodicals 36
The Place and Time of the next Annual Meeting determined...... 36
Scientific Queries answered.............. 36
Committees appointed by the President: On the Drug Market, On Scientific Queries, On Certificate of Membership, and Business Committee.. 40
Additional Scientific Queries answered.............................. 41
Volunteer Papers read.. 42
Report of the Committee on Specimens............................... 42
Permanent Committee on the Pharmacopœia appointed............. 43
The Pharmacopœia of 1860 commended to general use............. 43
Report of the Committee on Scientific Queries..................... 43
List of Scientific Queries, continued from the preceding Annual Meeting.. ... 47
Resolutions of Salutation and Gratulation to the British Conference of Druggists and Chemists.. 48
Resolutions of Thanks, &c.. 48
Adjournment of the Association.. 48
Report on the Progress of Pharmacy.................................. 49
Report of the Corresponding Secretary.................... 172
Report on the Drug Market.. 175

Special Reports and Essays.

On Aconite Root. By William Procter, Jr.......................... 196
On Leaves and Seeds of Conium maculatum. By Geo. C. Close.. 200
On Solutions of Tartaric Acid. By John M. Maisch.............. 204
On Still for Apothecaries. By William Procter, Jr................ 207
On Still for Pharmaceutical purposes. By Thomas Wiegand..... 210
On Buchu Leaves. By P. W. Bedford.............................. 211
On Preservation of Volatile Oils. By Alfred B. Taylor........... 212
On Therapeutical Properties of Sanguinarina. By R. P. Thomas, M. D.. 214
On Fluid Extracts. By William Procter, Jr......................... 222
On the Active Principles of the Strychnaceæ. By Ferdinand F. Mayer.. 248
On the Constitution of the Impure Oxides of Iron used in Medicine. By Ferris Bringhurst....................................... 253
On the Contamination of American Sulphuric Acid with Arsenic. By John M. Maisch... 255
On the Extraction of Potassa from Marl. By George J. Scattergood.. 256
On the Internal Revenue Law. By Edward Parrish............... 260
On Æsthetical Pharmacy. By Frederick Stearns................... 266
A Plea for the Hand-maiden. By Edward Parrish................ 271

Appendix.

Constitution.. 275
Form of Application for Membership.............................. 281
Roll of Members.. 283
Alphabetical Index of Contents.................................... 299

PREFATORY NOTE.

In conformity with the provisions of the Constitution of the American Pharmaceutical Association, the annual report of its Proceedings for the year 1863 (being the eleventh of the series), has been prepared by the Executive Committee, and is herewith issued and submitted to the members and to the Pharmaceutical profession generally. Comprising the transactions of one of the most agreeable and satisfactory meetings of the Association since its organization, this volume will be found to contain much that is valuable and interesting.

The Reports of the Standing Committees present more than the usual amount of information. That of the Committee on the Progress of Pharmacy is an elaborate and extended compilation, occupying 126 pages of the volume, and embracing a minute recapitulation of discoveries and observations in the subjects of chemistry and pharmacy. Its record extends from the date of the last report on the subject, to the middle of the year 1863; and in its arrangement Prof. Mayer has followed the excellent classification introduced by Prof. Maisch in the preceding Report.

The Report of the Executive Committee will be found in its customary place, in the early part of the Minutes.

According to the Constitution, these two Committees (the Executive one and that on Pharmacy) are the only "Standing Committees." There are, however, at present, three other Committees (namely, those on Scientific Queries, on the Drug Market, and on Business) of equal importance and permanency, which would advantageously be recognized as falling within the preceding class, since upon their action the interest and success of the Association in no small degree depend.

The Committee on Scientific Queries proposed the usual number of subjects for investigation, of which twenty-six have been accepted by various members, and four have been referred. It is hoped and earnestly urged, in view of the acknowledged benefit of these discussions, that those undertaking the examination of the various queries will feel incited to give their early and earnest attention to a faithful discharge of the obligations thus imposed. It may not be out of place to state that of questions previously proposed, seven remaining unconsidered have been continued to those to whom they had been submitted.

The Report of the Committee on the Drug Market is also a full and able report, adding much to the interest of the Proceedings. Though the first upon this subject, it may be expected to be hereafter continuously followed up as a permanent feature in the Proceedings; and it is hoped that the topic will continue to receive the attention its great importance demands.

The Business Committee, although from its character not required to make any formal report, has rendered valuable service in facilitating the operations of the Association.

The special Reports and Essays on Scientific and other themes, which form so essential a part of the transactions, if not quite so numerous as those of the preceding session, will it is thought be found to be at least as interesting and instructive.

At the meeting of the Association in 1862, it was determined to offer two prizes (open to general competition) for the best essays on two subjects then selected: the prizes to be determined, as well as awarded, at the expiration of two years, by a committee to be appointed at that time for the purpose. As the next meeting of the Association, in 1864, will complete the limit of the time set, the attention of all who may feel interested in the matter is invited thereto.

A becoming respect for the merits of a departed associate renders it proper that this introductory note should not be closed without a passing reference to the loss sustained by the

Association, the Profession, and the Community, in the sudden death of a most industrious and useful, talented and genial, upright and esteemed fellow-member, the late John Meakim of New York city.

In conclusion, the Executive Committee has only to state that the Index at the close of the volume has been consolidated into a single alphabetical classification of the matter, instead of being as heretofore distributed into a "General Index," and an "Index to the Report on the Progress of Pharmacy." It is believed that this arrangement will greatly facilitate reference.

Trusting that its not unpleasant labors may receive a friendly acceptance from the members of the Pharmaceutical Association, to their indulgence the Committee respectfully submits the work.

Alfred B. Taylor, Philadelphia,
Alpheus P. Sharp, Baltimore,
Frederick Stearns, Detroit,
M. H. Gleason, Boston,
Committee.

MINUTES

OF THE

ELEVENTH ANNUAL MEETING.

1863.

The Eleventh Annual Meeting of the American Pharmaceutical Association commenced its sittings at the Hall of the University of Maryland, Baltimore, on Tuesday, September 8th, 1863, at 3 o'clock.

The President, Wm. Procter, Jr., of Philadelphia, called the meeting to order, P. W. Bedford, of New York, acting as Secretary.

The Chair appointed Alfred B. Taylor, of Philadelphia, W. J. M. Gordon, of Cincinnati, and Samuel M. Colcord, of Boston, a Committee on Credentials, and requested that while they were preparing their report, the members present should enrol their names.

A. B. Taylor of the Committee on Credentials reported names of delegates appointed to attend this meeting, as follows:

By the Massachusetts College of Pharmacy.—Thomas Hollis, Henry W. Lincoln, S. M. Colcord, Charles A. Tufts.

By the New York College of Pharmacy.—George C. Close, William Neergaard, John Meakim, Ferdinand F. Mayer, P. W. Bedford.

By the Philadelphia College of Pharmacy.—Edward Parrish, William Evans, Jr., James T. Shinn, George J. Scattergood, William R. Warner.

By the Maryland College of Pharmacy.—J. B. Baxley, L. Phillips, James Balmer, J. J. Thomsen, William S. Thompson.

Cincinnati College of Pharmacy represented by W. J. M. Gordon.

The Chairman of the Executive Committee not having arrived, the President requested Mr. Colcord of that Committee to act as Chairman, and present the names of candidates for membership.

The Committee presented the following names for membership:

Thomas E. Kirby,	Baltimore.	Columbus V. Emich,	Baltimore.
S. Robinson Coale,	"	John F. Hancock,	"
Alonzo Lilly, Jr.,	"	Alexander H. Everett,	New York
Wm. W. Cunningham,	"	George M. Smyser,	Philadelphia.
Jonas Winter,	"	Henry W. Scheffer,	"
E. Walton Russell,	"	C. Lewis Diehl,	"

A ballot being ordered, the President appointed John. M. Maisch, of Philadelphia, and N. Hynson Jennings, of Baltimore, to act as tellers, who reported their unanimous election.

The roll being now called for the first time, thirty seven members answered as being present, viz.:

Samuel M. Colcord,	Boston Mass.
Edward R. Squibb,	Brooklyn, New York.
Charles Ellis,	Philadelphia, Pa.
William J. M. Gordon,	Cincinnati, Ohio.
Ferdinand F. Mayer,	New York, N. Y.
John J. Thomsen,	Baltimore, Md.
Henry Haviland,	New York, N. Y.
John M. Maisch,	Philadelphia, Pa.
Daniel S. Jones,	" "
M. H. Gleason,	Boston, Mass.
Evan T. Ellis,	Philadelphia, Pa.
James N. Callan,	Washington, D. C.
Llewellyn Phillips,	Baltimore, Md.
J. Faris Moore,	" "
J. B. Patten,	Boston, Mass.
Alpheus P. Sharp,	Baltimore, Md.
J. Jacob Smith,	" "
J. Brown Baxley,	" "
W. S. Thompson,	" "
Joseph Roberts,	" "
William R. Warner,	Philadelphia, Pa.

George J. Scattergood,	Philadelphia, Pa.
William Evans, Jr.,	" "
Alfred B. Taylor,	" "
N. Hynson Jennings,	Baltimore, Md.
William Procter, Jr.,	Philadelphia, Pa.
James Balmer,	Baltimore, Md.
Jonas Winter,	" "
P. Wendower Bedford,	New York, N. Y.
Edward Parrish,	Philadelphia, Pa.
Columbus V. Emich,	Baltimore, Md.
E. Walton Russell,	" "
John F. Hancock,	" "
William Wesley Cunningham,	" "
Ambrose Smith,	Philadelphia, Pa.
John Meakim,	New York, N. Y.
James T. King,	Middletown, N. Y.

At subsequent sittings the following members were present:

Charles A. Heinitsh,	Lancaster, Pa.
J. H. Lemmon,	Baltimore, Md.
George C. Close,	Brooklyn, N. Y.
R. H. Stabler,	Alexandria, Va.
Charles A. Tufts,	Dover, N. H.
Henry W. Lincoln,	Boston, Mass.
James T. Shinn,	Philadelphia, Pa.
Granville M. Clark,	Boston, Mass.
George F. H. Markoe,	" "
Giles G. C. Simms,	Washington, D. C.
Joel S. Orne,	Cambridgeport, Mass.
John G. Nagle,	Baltimore, Md.

Mr. Parrish, Chairman of the Executive Committee, having arrived, presented the names of the following gentlemen as having been elected members during the interim:

R. J. Toplis,	Yonkers, New York.
William F. Blocki,	Chicago, Illinois.
John C. Everson,	Philadelphia, Penn.
F. T. Whiting,	Great Barrington, Mass.
E. H. Price, M. D.,	Tamaroa, Illinois.
George P. Glazier,	Adrian, Michigan.
N. Cressman,	Waterloo, Canada West,
Richard Tener, Jr.,	Pittsburgh, Penna.

The Chairman then presented and read the Report of the Executive Committee, as follows:

REPORT OF THE EXECUTIVE COMMITTEE.

The Executive Committee congratulate their fellow members on the favorable auspices under which we are again convened, and the encouragement furnished by the progress of events towards the establishment of the just authority of the Government, and the renewal of those relations of union and friendship, which, alone, can furnish a guarantee of permanent peace.

The preparation of the Minutes of the last Annual Meeting for publication, and the issue of the tenth volume of the "Proceedings," devolvod upon the Chairman of this Committee, and notwithstanding the utmost efforts were used to hasten the publication, occupied near three months from the time of our meeting. The printing was done as usual, in Philadelphia, while the proof-sheets of the elaborate Report, (144 pages) on the Progress of Pharmacy were sent for correction to Prof. Maisch, its author, then a resident of New York. The Roll was revised by the Treasurer, while the other portions of the "proof" were submitted, as far as practicable, to those most concerned in their correctness.

An edition of a thousand copies was printed and bound in cloth, to correspond with the previous numbers; two separate Indexes belong to the volume, one general Index, and one pertaining to the Report on the Progress of Pharmacy.

The Index to the first eight volumes of the Proceedings, prepared by direction of the Association, and directed to be bound in the present volume, is also included in it, making an aggregate of 380 pages.

The cost of printing and binding the work was,	$739·74
" of printing circulars, constitution, &c.,	6·25
" of indexing,	10·00
" of enveloping, packing boxes, postage, &c.,	39·84
	$793·83

The Treasurer has paid these expenses, as will appear by his Report. The few copies sold as far as reported, amount to $20.

The distribution of the Proceedings to the members, was through a few members residing in the large cities, and by mail, as heretofore, each paying 25 cents postage. The members residing in the States under protection of the Union forces, were generally supplied, some beyond the lines, and a few others, accidentally omitted, may yet claim their copies.

The stock of "Proceedings" stored in the Philadelphia College of Pharmacy, has not materially altered since the last report; it is nearly as follows:

For 1853, 250 copies.
" 1854, 57 "
" 1855, out of print,
" 1856, 42 copies,
" 1857, bound, 29 copies.
" " unbound, 289 copies.

1858, bound, 97, unbound, 309
1859, " 95, " 14
1860, " 188, "
1862 " 368, "

Other copies have been sent on sale to members in New York, Boston, Baltimore, St. Louis, Cincinnati, and we think that in each of these cities, and perhaps others, one member should be regularly appointed to receive, distribute and sell copies of the Proceedings of the Association; each of these distributors to make report to the Executive Committee annually, of the stock on hand; in this way we can keep advised of the condition of our stock—a matter which must become increasingly important, as the volumes become scarce and the demand for back numbers increases with the increase of the membership.

The gratuitous distribution of the volume to the Medical and Scientific Institutions and Periodicals in this country, has, we think, been too little attended to, partly from want of definite instructions to the Committee. We believe that less than 50 copies have in any year taken this direction, while this must be regarded by all as the chief means of extending a knowledge of our Association.

Through the Smithsonian Institution, we sent about 40 copies to Foreign societies, periodicals and individuals interested in the Science and Art of Pharmacy.

Eight members have been elected during the past year by the Executive Committee; their names have been reported.

The Certificates of Membership, engraved and printed several years since, have nearly all been issued, and your Committee have but 22 copies in their hands; a few are deposited with the Treasurer; nearly 50 have been wasted by mistakes in signing them, or by the signing of unnecessary numbers by the officers, in advance of their being required. It is believed that not a few of those applying for membership have this diploma in view as a leading motive, and it has seemed to the undersigned, that great care is necessary, that unworthy individuals should not be placed in possession of so conspicuous a testimonial; for, although this certificate does not really carry with it any evidence of proficiency, it may obtain for its possessor more consideration from the uninitiated than the less showy diplomas of our Colleges of Pharmacy. In this view, the applications of some young and inexperienced pharmaceutists, who might by application become graduates in Pharmacy, have been discouraged by the Chairman of this Committee.

The annually recurring duty now devolves upon us, of revising our list of members, with reference to those who have passed from the present scene of probation. Of these we have been informed of as follows:

Charles T. Carney,	Boston,	Massachusetts.
David Roberts,	Boston,	Massachusetts.
Francis O. Bigelow,	Medford,	Massachusetts.
E. E. Knapp,	Norwalk,	Connecticut.
John P. Dodge,	New York,	New York.
T. C. McIntire,	Washington,	District of Columbia.
S. B. Waite,	Washington,	District of Columbia.

Asbury Kent,	Cincinnati,	Ohio.
G. Davidge Wood,	Baltimore,	Maryland.

Charles Tibbetts Carney was born in Lowell, Mass., Feb. 17, 1832. When a boy he chose the profession of Pharmacy, as congenial to his tastes and affording him the means of prosecuting the study of Chemistry, for which he early discovered a fondness. He commenced his career as a Student of Pharmacy, with the firm of Carleson & Hovey, in Lowell, where he continued till 1853, when he entered the Scientific School of Amherst College; with the design of pursuing his chemical studies. Some years afterwards he received the honorary degree of Bachelor of Science from this College. He commenced business in Lowell, but in a few years removed to Boston, where he entered with zeal into the labors and responsibilities of the drug business, but with an unfortunate result; after six years of striving, he yielded to an accumulation of debt, and made an assignment for the equal benefit of his creditors. His feelings on the occurrence of so trying an event were those of a true man, and, in a letter to a friend, he speaks of the one consolation, "that there can be found no stain or shadow on my honor or integrity." His next recourse was to the profession to which his earliest choice had been given,—that of a Chemist. In March, 1862, he opened a laboratory for Experimental Chemistry and Analysis, which promised to be a highly successful business; but alas! our friend was not destined to enjoy the rewards of industry or enterprise, which now opened before him. The seeds of consumption, that invidious disease which carries off so many thousands in their youth and beauty, had been slowly, but surely, developing in his system. In August, 1862, he went to seek in the equable climate of Minnesota, a respite from the steady progress of his disease. He died suddenly from hæmorrhage of the lungs, on the 23d of September, 1862, at Pine Bend, Minnesota. His body was removed to Boston, and interred in the family tomb, under Trinity Church. In contemplating this awful event, we have the assurance from those who were cognizant of his state of mind, that the same unfaltering faith and trust in Providence, that supported him through so many hours of trial, never failed him, and in his illness he looked with perfect peace through the dark valley to the shining mansions beyond.

The reputation of our late associate, as a chemist, was, perhaps, rather local than general. yet our knowledge of him as a co-laborer in this Association, enables us to speak with confidence, both of his industry and capacity. We learn that at one time he was appointed on the Examining Committee, in Chemistry, at Harvard College, a well deserved acknowledgment of his scientific ability. We are informed that he was usefully and honorably connected with the investigation of the qualities of the Green Oxide of Chrome, as a tint for bank-note engraving, and by an original investigation proved that this dye was not, as had been asserted, a complete safeguard against counterfeiting. This discovery was made at the instance of the Association of Banks, for the suppression of counterfeiting, by whom he was employed as a chemical counsellor.

Our friend became a member of this Association, in 1853, the first year of our meeting in Boston, and soon became actively concerned in its affairs. Several of his original papers appear in our published volumes of "Proceedings," of which none have attracted more attention than his Reports on Home Adulterations, read at the Annual Meetings in 1859, and 1860.

As Chairman of the Executive Committee, in 1859, he superintended the voluminous publication of the volume of that year.

Not by his zeal and ability as a Chemist and Pharmaceutist merely, but by his excellence as an associate and friend, are we led to mourn the death of Charles T. Carney, one of the youngest, most gifted and best beloved of our members.

David Roberts, of Boston, died suddenly of cholera morbus, in August, 1863. Though a practical pharmaceutist, he was also a graduate of medicine. He is spoken of by his brethren of the profession in that city, as a good apothecary and an honest man; though he took no active part in the movements in progress, for the improvement of our profession, he connected himself with this Association in 1858, and was an example of probity to those with whom he came in contact. He died at the age of 35.

Francis O. Bigelow, of Medford, Mass., fell a victim to consumption. He had been a traveller in pursuit of health, in Texas, but returned to his home to die. He is represented as a man of excellent character, intelligent and much interested in the progress of pharmacy, of which he was himself a good practitioner. He was much esteemed for honesty and a gentlemanly deportment, which endeared him to those who knew him. His connection with this Association dates from 1859.

Edwin E. Knapp, of Norwalk, Connecticut, late of the firm of Knapp & Lynes, died on the 13th of August, 1862, of pulmonary consumption. He was born on the 16th of June, 1820, and became a member of this Association in the year 1860.

John P. Dodge, of New York City, who became a member of the Association in 1857, was a victim to the present gigantic struggle for the maintenance of the Union; he was a Captain in —— Regiment, of New York State Volunteers, and fell mortally wounded while leading his Company in the attack on Fredericksburg, under Gen. Burnside. He was buried with military honors by the city authorities of the City of New York.

Your Committee regret that these sketches of our departed associates are so meagre, through the want of information in relation to their character and circumstances, and hope that succeeding committees may be better informed in regard to those who may be added to the list of the departed hereafter. Respectfully submitted.

Reports of special committees being in order, that on the Sale of Poisons was called for, but no reply was ready. The Committee on the Drug Market gave information that its Report was ready, and would be presented to-morrow.

The Chairman of the Committee on the Progress of Pharmacy, stated that their Report would be presented to-morrow.

The Committee on Scientific Queries likewise informed of their readiness to report.

It being now in order to appoint a Committee for the nomination of officers to serve during the ensuing year, the delegations present selected, in accordance with the Constitution, the following gentlemen:

Samuel M. Colcord,	Boston.
John Meakim,	New York.
Wm. Evans, Jr.,	Philadelphia.
J. Brown Baxley,	Baltimore.
W. J. M. Gordon,	Cincinnati.

To which the President added the names of

Alpheus P. Sharp,	Baltimore.
Edward R. Squibb,	Brooklyn.
Edward Parrish,	Philadelphia.

On motion, the name of the President was added to the Committee.

On motion of Edward Parrish, it was resolved to hold on the following day three sessions, the hours to be designated hereafter.

The President then read his Annual Report, as follows:

ANNUAL REPORT OF THE PRESIDENT, 1862—63.

Gentlemen of the Association:—

The period has arrived when in the fulfilment of a Constitutional requirement, it is my duty to address you in reference to the several subjects which should justly claim our attention at this, our Eleventh Annual Meeting.

The condition of political affairs since our last Convention in Philadelphia has been so disturbed, the current of the public mind so much diverted from its usual peaceful channels by the untoward accompaniments of war, it can hardly be expected that our members should be so far exempted from the common lot, as to have carried out the various special labors assumed a year ago; yet it is with no ordinary feelings that I congratulate you, fellow members, on the shaping of events by which we are enabled once more to convene together in this large city, in the pursuit of the laudable and useful objects of our National Association, and to indulge the hope that, before our next annual meeting, our afflicted country may emerge from the storm clouds and gloom which have so fearfully enveloped her, and the blessings of peace once more return throughout her ancient borders.

Ours is a peaceful profession, yet when the calamities of war assail, our aid is among the first invoked; consequently a large number of our members or their subordinates have been drawn into the service of the medical corps of the army. This is a cogent reason for the limited attendance of our members, and which will cease with the return of peace.

In the interim between the meetings, the vitality of the Association asserts itself through the EXECUTIVE COMMITTEE, from whose Report we have already had an outline of the labor performed during the year. The importance of having this Committee carefully constituted cannot be overrated. The amount of labor to be performed is large, its usefulness great, and its continuance in some respects unremitting. A degree of enthusiasm is needed to carry it through successfully, and no one expecting a sinecure should be placed in the Chairmanship. The editorial duty appertaining to this office, calls for a special qualification, and so long as the Constitution devolves upon its incumbent the preparation and publication of the Proceedings, he should be chosen mainly with a view to this important service. It is believed that a code of rules for the guidance of the two great Standing Committees of the Association would prove a valuable aid to them in the performance of their several duties.

The limited number of applications for membership during the past year is what might have been expected. It will be well to reconsider that portion of the Constitution by which members are created in the interim, and see if more affectiveness cannot be given, as regards the determination of the qualification and standing of the applicants, and in shortening the routine now required. It is the duty of the Executive Committee to hold custody of the Property of the Association, which, at this time, is solely of a literary character. It is information interesting to the members, and useful to his successor, when the Report of the Chairman of that Committee is accompanied, as in the present instance, by a list of the property in his charge; and whilst a list of the documents which are independent of the published Proceedings should not be required, it should be expected that this portion of the manuscript archives of the Association should be regularly kept in order, and annually reported as in proper condition for transmission to the next Committee.

The TREASURER will report to you on the condition of the finances of the Association, during the past year. The funds have been more than equal to the needed expenditure, leaving a handsome balance to go with the contributions now due, to meet the outlays arising from the present meeting.

The labors of the "Committee on the Progress of Pharmacy" will be laid open for your inspection at an early period in the future sessions of this meeting. The Annual Report on the Progress of Pharmacy has always possessed considerable interest, but during the last three or four years it has assumed a form which gives it a prominent place in the Proceedings, as a record of observations and discoveries.

At the meeting in New York, (1860), the retiring President suggested that the duties of this Committee should be divided amongst its members, so that each shall make a special report on a particular branch of the subjects of inquiry. If I understood the suggestion, it was not proposed to reconstruct the Committee, but only to apportion the subjects, so that, for instance, whilst the Chairman should make out a regular general Report, or resumé of the Journals, one member, say the Corresponding Secretary, should report on the pharmaceutical institutions at home and abroad; another on the literature of pharmacy and chemistry, evolved during the year; a third on the novelties and improvements in shop practice with a special view to extemporaneous and fancy pharmacy, and the last should have charge of the whole subject of toxicology as it interests the apothecary, so far as to report on—1st, cases of poisoning and antidotes used; 2d, on legal enactments just passed or on the working of old laws; and lastly, any suggestions that may arise bearing upon the subject. In this way each member of the Committee by having a distinct sphere of action and responsibility would be incited to greater industry, and the Chairman, by confining his attention to the general record of Pharmaceutical Progress, could give a more complete and well digested Report. To guard against the failure of the other members of the Committee to report, it would be safe to require the subsidiary reports to be handed to the Chairman, at least two weeks before the meeting occurs, so that in the event of inability, or other causes of failure on the part of his colaborers, the Chairman may have time to supply the deficiency as far as possible.

The Committee on the Drug Market has not been idle during the interim. The indefatigable Chairman of that Committee, despite his pressing engagements, has found time to prepare a report, which will be found to possess considerable interest, and is the first of the series which may be looked for from this new Standing Committee, in the future progress of the Association.

The appropriate duties of this Committee were not pointed out in the minute of its appointment. Its action may become exceedingly useful if rightly directed and perseveringly pursued; or it may be productive of no good results. That success should attend it, the Chairman should be so situated near the principal foreign drug trade and manufacturing marts, as to have the necessary opportunity through the entire year to get access to the facts, and his coadjutors should be selected, both by location and ability, with a view to the work. To speak of the Drug Market in a way to be useful to the reader, the Report must be practical—the result of inquiry, observation, and experiment. It should inquire what is in the Market—how it gets there—and what is its condition as to quality and purity, noting all adulterations and sophistications; and lastly, should include a tabular view of medicinal imports and indigenous medical products, with such a sketch of the statistics of pharmaceutical and chemical manufacturing as a proper history of the Drug Market justly calls for.

The Committee on a "List of Queries for Investigation," having had a sufficient time to make a well digested report, it is to be expected that a more careful selection has occurred than hitherto has been possible from the hurried manner of the service during the sessions.

The suggestion of subjects for prizes, which also comes within the scope of this Committee, requires careful consideration. In giving a direction to the talents of original investigators, the actual usefulness of the results sought, should be more conspicuous than their mere scientific interest, although this should by no means be overlooked, so that direct benefit may accrue to our profession.

At last accounts from the Chairman of the Committee on Poisons, which was appointed in 1860, the prospect of a Report was extremely doubtful.

In reflecting on that clause of the Constitution relative to life-membership, the question has arisen, how is the Association to be supported in the future so as to meet the natural increase of its expenses? The support of the Body is virtually thrown on a new set of members every ten years. Assuming that our present income is just sufficient to carry us on, we must necessarily ten years hence have just double our number. Where then is the margin for prizes, and other extraordinary outlays? Will it not be wiser to reduce the annual subscription to *one dollar* after ten years membership, so that the sum will cover the cost of a copy of the Proceedings due to each member, and give a reserved pecuniary power for the future?

It is not incompatible with the duties of this occasion to occupy a few minutes with our National Pharmacopœia. After a lapse of more than three years, the Committee having charge of the revision and publication of that work, have completed their labors, and it is now fairly before the pharmaceutists of this country. It is believed that in most respects it is the most complete Pharmacopœia we have had, and justly merits the study of every apothecary. It is time, gentlemen, that our practitioners of Pharmacy, of every grade, should *know* that we have a United States Pharmacopœia, by personal inspection. Hundreds, perhaps thousands, have never seen the work and know of it only through the several commentaries, and more particularly through that in the U. S. Dispensatory, which work is often confounded with the Pharmacopœia. The Committee, at the express recommendation of the Convention at Washington, have had the price put so low ($1) that no excuse can possibly exist on the score of expense, and to give encouragement to its general dissemination, it is recommended that a resolution be brought forward by the Business Committee, if they approve of it, urging on the members of this body and on pharmaceutists and druggists generally, that they acquaint themselves with it by personal study with the intention of adopting its formulas, and of giving greater uniformity to officinal preparations.

Before closing this Address, I would fain reimpress on you, fellow members, the need we have of more earnestness—I might say enthusiasm—in order to carry forward the several objects of our consociation with zeal and success. Already our National Association, through its Proceedings and manner of organization is attracting notice abroad, and our colaborers there are looking to us for fruits proportioned to the profession we make. Let us then individually interest ourselves in the work of progress—each in his own way; and by well directed efforts at home, among our fellow pharmaceutists, let us increase our numbers so as eventually, if possible, to include all the better qualified and liberally disposed pharmaceutists and druggists in the whole country. That our Association has been able to keep up its organization in the face of the discouraging circumstances which now surround it, is, to me, gentlemen, a strong evidence of its vitality, and leads to the assurance that when peace once more smiles upon us our Society will, with a due amount of *esprit de corps*, become an honor to American pharmaceutists, and command the respect of our brethren everywhere.

Having now presented the several topics which have appeared appropriate for the occasion, it remains for me, gentlemen, before vacating this Chair, which your partiality has placed in my keeping during the past year, to express to you that I have had a just appreciation of your confidence, and a sincere wish to merit your approbation.

WILLIAM PROCTER, JR.

On motion of E. R. Squibb, it was resolved that when this meeting adjourns, it shall adjourn to meet to-morrow morning at 9 o'clock.

The following resolution was presented and adopted:

Resolved, That the Professors of the University of Maryland and of the Maryland College of Pharmacy, be invited to take seats in this meeting during its sessions.

The meeting then adjourned.

Wednesday morning, September 9th—Second Session.

The meeting being called to order, the Secretary read the minutes of the previous meeting, which, on motion, were adopted.

The Executive Committee presented the names of the following gentlemen for membership, who were then balloted for and duly elected, viz.:

Henry J. Weber,	Philadelphia.
Talbot C. Murray,	“
George F. H. Markoe,	Boston.
Elisha H. Perkins,	Baltimore.

The Committee on Nominations reported the following names for Officers and Standing Committees, during the ensuing year, viz.:

For President.

J. Faris Moore,	Baltimore.

For Vice-Presidents.

John M. Maisch,	Philadelphia.
Charles A. Tufts,	Dover, N. H.
Geo. W. Weyman,	Pittsburgh, Pa.

For Treasurer.

J. Brown Baxley,	Baltimore,

For Recording Secretary.

William Evans, Jr.	Philadelphia.

For Corresponding Secretary.

P. W. Bedford,	New York.

For Executive Committee.

Alfred B. Taylor, *Chairman*,	Philadelphia.
Alpheus P. Sharp,	Baltimore.
Frederick Stearns,	Detroit.
M. H. Gleason,	Boston.
Wm. Evans, Jr., *Ex-officio*,	Philadelphia.

For Committee on the Progress of Pharmacy.

GEORGE J. SCATTERGOOD, *Chairman*,	Philadelphia.
GEORGE C. CLOSE,	Brooklyn.
JAMES T. KING,	Middletown, N. Y.
N. HYNSON JENNINGS,	Baltimore.
P. W. BEDFORD, *Ex-officio*,	New York.

On motion a ballot was ordered for President and Vice-Presidents, when the tellers reported their unanimous election.

The President was on motion requested to deposit an affirmative ballot for the remaining officers and committees; upon which the tellers reported their election.

Mr. Procter requested Prof. J. Faris Moore, the President elect, and William Evans, Jr., the Secretary elect, to occupy their respective Chairs.

The President on assuming the Chair made the following remarks:

Gentlemen of the Association:—

In choosing me to preside over this meeting you have paid the highest compliment to one of your youngest members, an honor which I duly appreciate. Although ignorant of many parliamentary usages, and feeling the responsibility resting on me as the successor of such men as Meakim, Colcord, and Procter, I shall endeavor to discharge the duties you have placed upon me to the best of my ability, and earnestly crave your indulgence with any short-comings.

Joseph Roberts on behalf of the Druggists and Pharmaceutists of Baltimore invited the Association to take part in an excursion down the Bay, on Thursday afternoon. The invitation was accepted.

The Treasurer's account being now called for, Henry Haviland, Treasurer, made the following Report, which was accepted.

TREASURER'S REPORT.

By the accompanying statement it will be seen that the Association is free from debt, and that there is a balance on hand of $498.34. The receipts during the past year show a slight increase, but the expenses have been much larger than ever before; should the same ratio continue, we cannot expect the surplus to continue for more than a year or two. Therefore I would not recommend any measure looking to any great expenditure.

In my last Report, I proposed that members who have been a number of years in arrears, should be addressed in regard to having their names dropped from the list of members. I have not addressed such members, believing it best to postpone doing so until the present war is terminated, when all such members can be communicated with. Another reason for not doing so, was the large number that came forward and paid their arrears during the past year, leading to the belief that the number in future will be much diminished.

Thanking the members of the Association for their kindness to me during the last three years, and for their promptness in payments, I would respectfully ask that my name be not brought forward again in connection with this office.

Respectfully,

Henry Haviland.

American Pharmaceutical Association in account with
Henry Haviland, *Treasurer.*

DR.

1862.			
Aug.	27.	Freight on books to Philadelphia,	$1 00
"	17.	Executive Committee, bill expenses,	8 55
Sept.	1.	Paid J. M. Maisch,	50 00
"	10.	Postage,	80
"	10.	Freight on books from Philadelphia,	63
Nov.	14.	Paid Draft, Merrihew & Thompson, bill of printing,	200 00
"	14.	Paid Druggist's Circular,	11 20
Dec.	6.	Paid bill (Farrell), Muspratt's Chemistry,	28 00
"	26.	Freight to Procter,	1 00
"	26.	Postage,	55
"	22.	Draft, Merrihew & Thompson,	250 00
1863.			
Jan.	28.	Draft, Merrihew & Thompson,	295 99
May	8.	Paid Executive Committee, bill expenses to E. Parrish,	44 94
"	8.	Postage,	30
Aug.	20.	Postage,	18 02
Sept.	5.	Paid bill Price, printing,	6 25
"	5.	" " Tubby, filling up certificates,	8 00
"	5.	" " Morris, filling up certificates,	1 00
			$926 23
		Balance on hand,	498 34
			$1,424 57

		DR.	
1862.			
Aug.	27.	By cash in hand,	$675 37
1863.			
Sept.	5.	" " receipts,	$749 20
			$1,424 57
September 5.		By balance on hand,	$498 34

On motion, the Chair appointed John Meakim and James T. Shinn, a Committee to audit the Report.

The Report of the Committee on the Progress of Pharmacy being called for, it was read in part by the Chairman, Prof. F. F. Mayer, who stated that it commenced with the date of the conclusion of the Report of his predecessor, Prof. John M. Maisch. The Report being read in part, the heads of the remainder were alluded to, and on motion it was accepted, and referred to the Executive Committee for publication.

Edward Parrish, in making the above motion of acceptance, commended the labor undergone in the preparation of this paper, and thought the acknowledgments of the Association were due to the authors of the Reports which have been for several years presented by this Committee.

The Report will be found on page 49.

The Report of the Committee on the Drug Market being next in order, it was produced and read by the Chairman, Dr. E. R. Squibb. It was accepted and referred to the Executive Committee for publication.

The Report will be found on page 175.

John M. Maisch presented a specimen of Benzoin which came from a respectable drug house in New York, consisting of chips of wood agglutinated by some gummy substance, containing not a trace of Benzoic Acid, and but a slight trace of Cinnamic Acid. He stated that it had been sold to perfumers.

Professor Procter from the Committee appointed last year to bring forward a list of Queries to be addressed to members, for report at the next annual meeting, read the following list as prepared, which on motion was accepted, and the committee was continued to obtain the names of members willing to accept subjects for investigation.

J. J. Thomsen presented a communication from William Saunders, London, C. W., accompanying samples of Canadian Pharmaceutical manufactures. Also a letter from H. T. Cummings, Portland, Maine, and specimens of Drugs and Preparations from James S. Aspinwall and William R. Warner.

The Committee appointed to audit the Treasurer's account having attended to the duty assigned them, presented their report, which was accepted and the Committee discharged from further service.

A communication was received from the publisher of the "Chemist and Druggist," London, accompanied by twenty copies of the last number of the journal, with the request that the proceedings of this meeting might be forwarded for publication. On motion of Dr. Squibb the letter was accepted and referred to the Corresponding Secretary, with directions to reply to it, and also to comply with the request contained in it.

The Executive Committee brought forward the following names for membership.

John C. Long,	Lancaster, Pa.,
Frances X. Dooley,	Washington, D. C.,
John G. Nagle,	Baltimore, Md.

A ballot being ordered, they were declared unanimously elected.

The matter of Prizes being referred to by Professor Procter, after some discussion the subject was for the present dismissed.

The continuance of a Committee on the Sale of Poisons being under debate, it was finally, on motion, resolved that the committee be for the present discontinued.

Dr. Squibb introduced the matter of life membership, and stated that soon, under the constitution, the funds of the Association would be very much curtailed, by old members becoming exempt from the annual payment. After some discussion, in which Edw. Parrish, Chas. Ellis, A. B. Taylor, and H. Haviland took part, on motion the consideration of the whole subject was dropped for the present.

The following resolution was introduced by Edw. Parrish and after discussion adopted:

Resolved, That the Corresponding Secretary be directed to address the publishers of such Pharmaceutical and Chemical Journals in foreign countries as would be of value to our Committee on the Progress of Pharmacy, asking that the numbers of their Journals for the year be sent to the Chairman of that Committee, or other suitable address, in exchange for the Proceedings of this Association, and that he be authorized to draw on the Treasurer for the expenses of such exchange, and, if necessary, for the cost of subscription to the more desirable periodicals.

E. Parrish moved that a committee of three be appointed to take into consideration the present constitutional provision for the election of members, and also the propriety of issuing a new form of certificate of membership. Adopted.

Dr. Squibb moved that the Committee on Scientific Queries the Committee on the Drug Market and the Business Committee, should be appointed by the Chair; which was adopted.

The subject of the place of meeting next year being under debate, and a motion having been made that it be in Cincinnati, Ohio, without coming to any decision the meeting adjourned to 3 o'clock, P. M.

Wednesday afternoon—Third Session.

The meeting was called to order by the President. The Minutes of the last meeting were read and adopted.

The discussion of the time and place of meeting being resumed, it was moved by Dr. Squibb that when we adjourn we shall adjourn to meet in Cincinnati, Ohio, on the afternoon of the third Wednesday in September, 1864, at 3 o'clock. After discussion the motion prevailed.

The Chair announced the Committee on Specimens sent here for exhibition; Alpheus P. Sharp, Chas. A. Tufts and Geo. J. Scattergood.

Answers to the Scientific Queries being now called for, the first, relative to the medicinal principle of Chenopodium Anthelminticum, elicited no reply. Mr. Balmer had engaged himself in the investigation, but the paper was not sufficiently complete to offer to the Association.

Query No. 2. Relative to the active principle of Capsicum.

E. Parrish in reply to this question stated that circumstances had prevented him from giving it full attention. It was continued to him.

Query No. 3. Respecting the collection of Tartar in the wine region of Ohio. W. J. M. Gordon not being present, this query was for the present passed over.

Query No. 4. Comparison between foreign and domestic Aconite. An essay on this subject was read by its author, Wm. Procter, Jr. It was accepted and referred to the Executive Committee for publication.

Query No. 5. As to the best permanent solvent for Cantharadin for a liquid blistering preparation. Professor Moore not being ready to reply, the subject was continued to him, to be reported on next year.

Query No. 6. Respecting the advantage of the seeds of Conium Maculatum as a basis for the medicinal tincture. Replied to by George C. Close. The subject of Conium brought out interesting remarks from Dr. Squibb, Professor Procter and others, showing the fugitive nature of Conia, and the care requisite in making preparations containing it. The paper was referred for publication.

Query No. 7. Designed to elicit general information relative to the oils wells of western Pennsylvania. George W. Weyman to whom this matter had been referred not being present, and no reply coming to hand, the query was continued to him.

Query No. 8. Respecting Creasote was not replied to by Chas. Bullock of Philada. to whom it had been assigned.

Query No. 9. The following letter from Prof. Robert P. Thomas, of Philadelphia, was read in reply to this query and to query number eleven.

Philada. Aug. 28, 1863.

Prof. Wm. Procter, Jr., Prest. of Amer. Pharm. Association.

Dear Sir,—Question 9 of the Proceedings of last year, referred to me. concerning the influence of Propylamine on uterine contraction, is in process of investigation.

Cases seldom occur in which a trial could be made, and therefore more time is required. The question had better be continued.

Question 11.—" What is the true botanical source of Southern Prickly

Ash Bark," cannot be investigated during tha war. I suggest that it be dropped for the present.

Very respectfully yours,

ROBERT P. THOMAS.

The ninth query was then on motion continued to Prof. Thomas as requested.

Query No. 10. James T. Shinn reported having been unable to carry out the investigation as to the relative proportion of tannin in the indigenous astringents of the United States.

Wm. J. M. Gordon having returned to the Association, query number three was again called up. He stated verbally that owing to the opinion prevailing among the wine-growers that Tartar is advantageous to the wine while in contact with it, no Cream of Tartar is offered for sale from the wine region of Ohio, and it is not probable that there will be any surplus of it which will affect the trade.

Query No. 11. Dropped for the present, as suggested by Prof. Thomas.

See his letter under query number nine.

Query No. 12. In answer to this, an essay on Tartaric Acid and the medicinal tartrates was read by John M. Maisch. On motion it was accepted and referred to the Executive Committee for publication.

Query No. 13. No reply was received from Henry T. Fish as to the course to be adopted by Pharmaceutists in view of the prevalence of factitious wines and brandies. The subject was deemed of sufficient importance to merit investigation and was referred to Edward Parrish, of Philada.

Query No. 14. On pharmaceutical stills. A description of a still designed by himself was read by Professor Procter, and his essay and remarks were illustrated by a specimen of the still, made of tinned iron, and of the size adapted to the ordinary wants of the pharmaceutist. A volunteer paper by Thos. S. Wiegand of Philada. on the same subject being reported and deemed appropriate to be read at this time, it was accordingly read by James T. Shinn; both essays were accepted by the Association and referred for publication. The whole subject of distillation being now under consideration, critical remarks were made by Dr. Squibb and others, upon stills now in use. P. W. Bedford stated that the copper cans, in which volatile oils are sold in commerce, may be used economically as kettles for boiling syrups, and may be easily converted into stills, by adapting tinned iron or copper heads to them.

Query No. 15. On the best method of testing the strength of acid and alkaline liquids. This question which had been referred to Dr. Wilson H. Pile of Philada. met with no response from him.

Query No. 16. No reply to this query, which was in reference to the best method of keeping garlic in the shop, so as to prevent its growth, was received from E. W. Sackrider, of Cleveland.

Query No. 17. A comparison of the values of the commercial varieties of Buchu. This subject, which had been investigated, by P. W. Bedford of New York, was now treated of by him in an essay which he read. On motion the paper was accepted and referred for publication.

Query No. 18. On the detection of adulteration in Ipecacuanha. No reply was received from W. Wright, Jr., of New York.

Query No. 19. On the domestic manufacture of Lactucarium. H. A. Tilden of New York, to whom this question had been referred, did not forward any reply.

Query No. 20. An essay on the protection of volatile oils from the action of light and air was read by its author, Alfred B. Taylor of Philada. The paper was directed to be published in the Proceedings. The reading of this paper gave rise to interesting remarks on the action of light, and it was stated that bottles of canary colored grass had proved very useful in excluding the actinic rays of light.

The Association then, on motion, adjourned to 8 o'clock this evening.

Wednesday afternoon—Fourth Session.

The Association having convened at the appointed time, the minutes of the last session were read and adopted.

The Chairman of the Executive Committee brought forward the names of James B. Heyl, Hamilton, Bermuda, and Joseph C. O'Brien, Baltimore, Md., who being ballotted for were unanimously elected members of the Association.

Chas. Ellis having moved to grant a certificate of membership in this Association to Washington L. Laycock, which shall be a copy of one received by him and destroyed by fire, said certificate to be marked duplicate, the motion was adopted.

The reading of Scientific Queries being resumed, a reply to number 21, being an essay on the merits of Sanguinaria as a therapeutic agent, by Prof. R. P. Thomas, of Philadelphia, was read by Prof. Procter, and on motion referred to the Executive Committee for publication.

Query No. 22. On Fluid Extracts. Professor Procter read an elaborate and valuable paper on this increasingly interesting subject, which was accepted and referred for publication.

Query No. 23. On the relative merits of White and Black Mustard for use as Sinapisms, elicited no reply from Prof. J. F. Moore of Baltimore.

Query No. 24. On the preparations of the Strychnaceæ.

Replied to by Prof. F. F. Mayer of New York. The essay was directed to be incorporated in the Proceedings.

Then, on motion, the Association adjourned to meet at 9 o'clock to-morrow morning.

Thursday Morning, September 10th—Fifth Session.

The President called the meeting to order, and the minutes of the last session were read and adopted.

The Executive Committee brought forward the name of Gustavus Dohme, Baltimore, Md., for membership. A ballot being ordered resulted in his unanimous election.

The President announced the following Committees.

On the Drug Market.—John M. Maisch, of Philadelphia, Chairman; William S. Thompson, of Baltimore; Ferdinand F. Mayer, of New York: Samuel M. Colcord, of Boston; Chas. Bullock, of Philadelphia.

On Scientific Queries for 1864.—Edward Parrish, of Philadelphia, Chairman; N. Hynson Jennings, of Baltimore; Richard H. Stabler, of Alexandria, Va.; James T. Shinn, of Philadelphia.

Business Committee.—Dr. E. R. Squibb, Chairman; Joseph Roberts, of Baltimore; W. J. M. Gordon, of Cincinnati.

On the present Constitutional Provision for the Election of Members, and on the propriety of issuing a New Certificate of Membership.—Edward Parrish, Chairman; John Meakim, of New York; James Balmer, of Baltimore.

The reading of Scientific Queries being resumed and number 25 called up, an essay by Ferris Bringhurst, of Wilmington, Del., on the constitution of the impure Oxides of Iron used in medicine, was read by E. Parrish. The matter being discussed, it was shown that in some samples of precipitated carbonate of iron more than ten per cent of protoxide had been found. The essay was accepted and referred for publication.

Query No. 26. On the methods of detecting the adulterations of olive oil. No reply was received from Jonas Winter, of Baltimore, to whom this question had been referred.

Query No. 27. On the presence of Arsenic in Sulphuric and other acids. Replied to by John M. Maisch. On motion accepted and referred for publication.

Query No. 28. On potassa in marl. George J. Scattergood being absent, the secretary read his essay on this subject, which was on motion accepted and referred for publication.

Query No. 29. Is the process of dialysis applicable in Pharmacy? If so, in what instances may it be employed? Prof. Procter pleaded want of time to complete the investigations necessary for bringing this matter before the Association in an acceptable form. On motion it was continued to him.

Query No. 30. An interesting essay on the Internal Revenue Law was read by its author, Edward Parrish. It was accepted and referred for publication.

Query No. 31. On Chelidonium Majus as a source of Sanguinarina. No written essay was presented by P. W. Bedford, who stated, however, that he had separated Sanguinarina from Chelidonium Majus. John M. Maisch believed that it could not be obtained as economically as from Sanguinaria root.

The reading of Scientific papers being concluded, a volunteer paper on Æsthetical Pharmacy, by Frederick Stearns of Detroit, was read by Prof. Procter. It was on motion accepted and referred for publication.

A volunteer paper entitled "A plea for the Hand-maiden," was read by Edward Parrish. It was on motion accepted and directed to be printed in the Proceedings.

The Executive Committee brought forward the names of William H. Brown, Alexander E. Brown, S. Ellwood Morrison, and Charles E. Dohme, all of Baltimore, Md., for membership; on balloting they were all unanimously elected.

The following report of the committee on specimens was read and accepted.

"The Committee on Specimens on exhibition present the following Report. Although they had but few to examine, some of them were exceedingly interesting to the committee, especially those deposited by James S. Aspinwall of New York, consisting of Insect Flowers, Indian Hemp, Salep Root, and East India Opium. The pharmaceutical preparations deposited by William Saunders of London, Canada West, consisting of eleven specimens of Fluid Extracts and one of Podophyllin, are evidently prepared with care, and seem to be superior preparations."

"Wm. R. Warner of Philada. is represented by beautiful specimens of Wistar's Lozenges, Pills of Iodide of Iron (silvered), Sugar-coated Pills of Assafetida, Spitta's Lozenges and Cantharidal Tissue. The Hydrometer with Thermometer for testing Alcohol, Brandies, &c. deposited by Sharp & Dohme of Baltimore is worthy of some notice as being simple in construction.

(Signed) A. P. Sharp.
C. A. Tufts.
Committee.

Dr. Squibb, of the Business Committee, presented the following preamble and resolution, relative to a Permanent Committee on the Pharmacopœia.

Whereas, It is desirable that during the interval between the decennial revisions of the Pharmacopœia there may be some repository in this Association for the information and knowledge resulting from prolonged practical use of the officinal formulas; and some members whose particular duty it may be to observe during this interval what additions or omissions might be usefully made in the next ensuing revision; therefore,

Resolved, That a permanent Committee on the Pharmacopœia, to consist of three members, be appointed to keep a current commentary upon the Pharmacopœia, and a record of all useful criticisms and suggestions that may be made upon it while in practical use, with a direct view to its future revision; and that the Chairman of this Committee may, at his option, report an abstract of such information as he may gain, at the annual meetings of the Association; and, finally, that members generally be requested to communicate to the Chairman any information or suggestions bearing upon the duties of the Committee.

The resolution was adopted and the President appointed Dr. E. R. Squibb, Wm. Procter, Jr., and Alfred B. Taylor, the Committee.

Edward Parrish introduced the following resolutions, which were on motion adopted:

Resolved, That the late edition of the U. S. Pharmacopœia, issued by the Committee of Revision and Publication appointed in Washington in 1860, meets the warm approval of this Association, and we commend it to the universal acceptance of the physicians and pharmaceutists of the United States, and will use our individual efforts to give it currency and to enforce its authority as the standard of practice throughout the country.

Resolved, That our thanks, and the thanks of the profession at large, are due to the Committee of Revision and Publication for their zeal and perseverance in the difficult and onerous labor devolving upon them, and for the production of a volume so universally approved and accepted.

The Chairman of the Committee on Scientific Queries, stated that a large number of the Queries before reported had been accepted by members present, and some had been referred to others not in attendance, but that many of the queries remained unaccepted. The Report was now finally adopted and referred to the Executive Committee, with authority to publish the names of members who may be found to accept questions still open for investigation.

The Report is as follows, viz.:

The Committee appointed at the meeting in Philadelphia in 1862, to report a series of questions for investigation, offer the following as the result of their labor:—

1. Fermentation and cryptogamic vegetation viewed as destructive agents in connection with drugs and pharmaceutical preparations. What are the best means of avoiding the former, and arresting the growth of the latter without injury to the drugs and preparations?

Accepted by George J. Scattergood, of Philadelphia.

2. Is there a practicable process whereby Aloin may be easily extracted

from commercial Aloes, so as to reduce the price of this principle in the market?

Accepted by P. W. Bedford, of New York.

3. Is there an eligible means by which all the medicinal matter of Cinchona may be held in a permanent solution without deposition of cinchotannates or cinchonic red?

Accepted by Alfred B. Taylor, of Philadelphia.

4. What is the best process for extracting lard so as to fit it for the purposes of Pharmacy; and what the best means for preserving it for use during the summer and autumn?

Accepted by Henry W. Lincoln, of Boston.

5. What is the proportion of camphor present in the officinal Aqua Camphoræ?

Accepted by George F. H. Markoe, of Boston.

6. Does the aqueous extract prepared from Jalap that has been previously exhausted by alcohol possess any medicinal properties, or does the alcoholic extract of Jalap fully represent its virtues?

Accepted by Alfred B. Taylor, of Philadelphia.

7. Does the volatile oil of Matico possess the power of stopping hæmorrhage, or does that property of the drug reside in some other ingredient, or in the physical structure of the leaf?

Accepted by James S. Higgins, of New York.

8. On the pharmaceutist as a merchant, and on commercial education in relation to the successful prosecution of the pharmaceutic art.

Accepted by Frederick Stearns, of Detroit.

8. Stramonium is abundant in the United States, and its alkaloid Daturia is alleged to be identical with Atropia in Belladonna. If this be true, in what relative proportions do these plants contain this principle, and why may not Stramonium be used as a source of Atropia?

Accepted by Prof. F. F. Mayer, of New York.

10. It is now known that liquid Storax is a production of Liquidambar Orientale, a tree closely resembling L. styraciflora of the United States. It is also well known that our indigenous Liquidambar yields in warm latitudes a balsamic exudation, analogous to storax in odor and to tolu in consistence; and contains cinnamic and benzoic acids. Query.—Will this tree yield a product identical, or nearly so, with commercial storax, if it is treated in the same manner?

Accepted by William Procter, Jr., of Philadelrhia.

11. Is nicotina the active principle in carefully dried green tobacco leaves? Do the seeds of tobacco contain the same alkaloid? and if so, does the proportion of nicotina found in commercial (fermented) tobacco justify the belief of Liebig (Agricultural Chemistry, Amer. ed., 184), that nicotina is an artificial product?

Accepted by Prof. F. F. Mayer, of New York.

12. What is the best arrangement for spreading plasters of uniform sizes, rapidly and well; and what is the best form and weight of spatula for spreading plasters extemporaneously? together with observations on the dispensing of this form of preparations.

Accepted by Edward Parrish, of Philadelphia.

13. Bitter Wine of Iron. What is the best formula for this preparation, in which citrate or tartrate of iron is presented along with one or more bitter tonics and aromatics, combining efficiency as a chalybeate tonic with elegance and agreeability in appearance and taste; with comments on similar preparations now in use?

Accepted by James T. Shinn, of Philadelphia.

14. Glycerin—its mission (so to speak) in Pharmacy as a remedy, as an adjuvant, and as a solvent.

Accepted by W. J. M. Gordon, of Cincinnati.

15. It has been stated that the poisonous properties of Rhus toxicodendron reside in a volatile alkaloid. Is this true? Is this alkaloid dissipated when the leaves are dried? Can it be isolated in a state fit for medical use, or can the properties of the leaves be preserved in some form as a pharmaceutical preparation?

Accepted by John M. Maisch.

16. The leaves of Solidago odora possess the odor of anise. Are their medicinal properties due to a volatile oil, identical in composition with the oil of anise?

Accepted by Charles A. Heinitsh, of Lancaster, Pa.

17. The oil of Erigeron canadense is frequently employed in medicine for uterine hæmorrhage. Is its reputation deserved? Where is it chiefly produced? In what proportion does the herb yield the oil? and what are its physical and chemical properties?

Referred to Dr. R. P. Thomas, of Philadelphia.

18. The taste of Dittany (Cunila mariana) is very like that of horse-mint (Monarda punctata). Does the volatile oil of the former resemble that of the latter in physical and chemical properties?

Accepted by Charles A. Heinitsh.

19. Spatulas, stirring-rods, agitators, and mechanical stirrers used in pharmaceutical preparations: their material and quality, form and construction; with critical remarks.

Referred to Thomas S. Wiegand.

20. What are the best vessels in which to dispense ointments and cerates, combining fitness with elegance and economy; and what is the best plan for keeping this class of preparations in the dispensing shop, so as to retard their tendency to oxidation?

Accepted by William S. Thompson, of Baltimore.

21. Maruta cotula and Leucanthemum vulgare are extensively introduced into the United States; can their flowers, as has been repeatedly asserted, be made available for destroying insects, and may they be regarded

as a substitute for the so-called "Persian Insect Powder," which is derived from the nearly allied genus Pyrethrum?

Accepted by George F. H. Markoe, of Boston.

22. Pumpkin seeds have acquired some reputation as a remedy in tænia. Does their curative power reside solely in the fixed oil?—if so, what is the best process for extracting it, and of dispensing it for internal use?

Accepted by Charles A. Tufts, of Dover, N. H.

23. An essay on gas-heating apparatus adapted to the various purposes of the apothecary, so as to enable him to conduct his processes in or near the shop; which shall combine efficiency with economy; illustrated by figures or specimens.

Accepted by P. W. Bedford, of New York.

24. Valerianate of Ammonia. The crystalline salt made by the process of B. J. Crew is apt to have adhering valerianic acid, which renders it disagreeably odorous and moist. What is the best means of obtaining a dry, neutral salt?

Referred to Charles Bullock, of Phila.

25. What is the best formula for Elixir of Valerianate of Ammonia, which shall be nearly free from valerianic odor and elegantly aromatized?

Accepted by Joseph Roberts, of Baltimore.

26. Is there a reliable test for the active resin from Cannabis sativa of the East Indies, whereby the genuineness of Extract of Indian Hemp may be satisfactorily and easily ascertained by the pharmaceutist?

Accepted by Wm. Procter, Jr., of Phila.

27. What is the best kind of press for the pharmaceutical laboratory, on a moderate scale, combining great power with simplicity and easy manipulation? and can the principle of the hydraulic press be employed?

Accepted by R. H. Stabler, of Alexandria, Va.

28. Pure tannic acid being an odorless substance, is there an odorous substance in nutgalls that is found adhering to commercial tannic acid? or is the odor very commonly noticed in that substance, due to impure ether used in its preparation?

Accepted by Wm. Procter, Jr,, of Phila.

29. Owing to the proverbial difficulty in keeping garlic from growing and drying up to its detriment, and to the fact that garlic may be prepared so as to keep like other drugs, by the destruction of the vitality of the bulblets, and their partial dessication,—it is queried: Can the latter process be advantageously applied to the commercial drug? and if so, how is it effected?

Accepted by A. P. Sharp, of Baltimore.

30. What course should be adopted by Pharmaceutists, in view of the present state of the liquor market, as regards factitious Brandies and Wines.

Referred, by vote of Association, to Edward Parrish, of Philadelphia.

In conclusion, the Committee will remark that they have not brought forward any questions for prizes, but are prepared to do so should the Association direct it after the reading of this Report,

William Procter, Jr.,
John M. Maisch,
J. Faris Moore,
Charles Bullock,
P. W. Bedford,
Committee.

The following is a list of subjects continued from the last meeting of the Association:

1. Is there a principle in Chenopodium anthelminticum analogous to Santonin, or does the medicinal power of this plant depend wholly upon its volatile oil?

Continued to James Balmer, of Baltimore.

2. Is there a crystalline active principle in Capsicum, or does it owe its pungency to a soft resin?

Continued to Edward Parrish, of Philadelphia.

3. What is the best permanent solvent for Cantharidin, suitable for making a pharmaceutical preparation for blistering?

Continued to Prof. J. Faris Moore, of Baltimore.

4. Has Propylamin, as it exists in Ergot, any power to produce uterine contraction? and if so, does commercial Propylamin from herring pickle possess a like power?

Continued to Prof. Robert P. Thomas, of Philadelphia.

5. What is the most convenient and economical arrangement by which the apothecary can quickly and reliably ascertain the strength of acid and alkaline liquids for pharmaceutical preparations?

Continued to Dr. Wilson H, Pile of Philadelphia.

6. Is the process of dialysis applicable in Pharmacy? If so, in what instances may it be employed?

Continued to Prof. William Procter, Jr., of Philadelphia.

7. What are the methods of detecting the adulterations of olive oil?

Continued to Jonas Winter, of Baltimore.

The following preamble and resolutions were now presented by Edward Parrish:

Whereas, The mutual cultivation of science tends to break down sectional and national distinctions, and to unite all of kindred objects and pursuits in a common bond of friendship and good will; and whereas, we have learned with satisfaction of the Druggists and Chemists of Great Britain having been summoned near the same time as our present meeting, and as we believe for purposes similar to our own; therefore, *Resolved*, That we view this movement on the part of our brethren of the mother country with feelings of satisfaction and encouragement, and invite their friendly co-operation and correspondence in advancing a knowledge of the science and art of Pharmacy, and in promoting the elevation of the profession to a position commensurate with the importance and dignity of its objects.

Resolved, That a copy of these Resolutions, signed by the proper officers of the Association, be transmitted to the President of said Conference of Druggists and Chemists of Great Britain by our Corresponding Secretary, who is also directed to solicit an exchange of their published Proceedings for those issued by this Association.

On motion, the preamble and resolutions were unanimously adopted.

John Meakim presented the following resolution, which was adopted:

Resolved, That a vote of thanks be tendered by the Association to the retired President for his able administration of the duties devolving upon his office, and to the late Treasurer and Secretary for the very prompt and satisfactory performance of their respective duties.

Dr. E. R. Squibb, of the Business Committee, presented the the following resolutions, which were unanimously adopted:

Resolved, That the thanks of the Association are tendered to the Faculty of the University of Maryland for the use of their rooms and other accommodations so kindly furnished, and for the attention of their Janitor, during its sessions in Baltimore; and that the Secretary be directed to send a copy of this resolution to the Faculty through the Baltimore delegation.

Resolved, That the thanks of the Association are tendered to the pharmaceutists of Baltimore for their hospitality, kindness and numerous attentions to the necessities of the Association and the wants of the individual members.

Edward Parrish made some remarks expressive of the kind feelings entertained by the members generally towards the Baltimore members, who have contributed so much towards the success and satisfaction of this meeting of the Association.

The Minutes of the Proceedings during the different sessions were read by the Secretary and finally adopted.

The Association then on motion adjourned, to meet, pursuant to the resolution adopted at a previous session, in Cincinnati, Ohio, on the afternoon of the third Wednesday in September, 1864, at 3 o'clock.

WILLIAM EVANS, JR., *Secretary.*

REPORTS OF COMMITTEES.

REPORT ON THE PROGRESS OF PHARMACY.

The Committee appointed at the last meeting of the Association, in presenting the report on the Progress of Pharmacy for the year ending July 4, 1863, desires to state, that for the better furtherance of the interests of your body, and in accordance with the practice of former years, its labors have been deputed to the Chairman, who has been permitted to frame and complete the Report, and presents the same in the name of the Committee. By leaving it in the hands of a single member, experience has taught the Association, that the desired end is more surely accomplished, and the work formed into one homogeneous whole, which is not very readily attainable by a combination of several workers.

The frame work and arrangement of the Report is, with very slight variations, the same as that established in the one of the year before, rendered by our excellent fellow-member, Prof. Maisch. The alterations consist only in the condensation of a few headings, the classification not being interfered with.

Several subjects which were unavoidably omitted from the Report of the last Committee have been received among the matter of the present. The Association and your Reporter are under great obligation to the Editor of the *Jahresbericht für Pharmacie*, (Cannstatt's) for 1861, Prof. Wiggers in Gœttingen, from whom the volume for that year, containing the desired information, has been received. We are likewise indebted to the Editor of the American Journal of Pharmacy, to the American Druggists' Circular, and to several members of the Association, for having placed at our disposition their periodicals and exchanges.

The periodicals from which the Report is prepared, with the abbreviations used to designate them, are the

American Journal of Medical Sciences,	*Am. J. Med. Sc.*
American Journal of Science and Art,	*Am. J. Sc.*
American Journal of Pharmacy,	*Am. J. Ph.*
American Druggists' Circular,	*Am. D. Circ.*
Boston Medical and Surgical Journal,	*Boston M. S. J.*
Pharmaceutical Journal and Tranactions,	*Ph. J. Trans.*
Chemical News,	*Ch. N.*
Journal of the Chemical Society,	*J. Ch. Soc.*
London Chemist and Druggist,	*L. Ch. Drg.*
Medical Times and Gazette,	*Lond. M. T. Gaz.*
London Lancet,	*Lancet.*
Annalen der Chemie u. Pharmacie,	*Ann. Ch. Pharm.*
Annalen der Physik u. Chemie,	*Ann. Phys. Chem.*
Journal für praktische Chemie,	*J. prakt. Ch.*
Chemisches Central-blatt,	*Ch. C. B.*
Pharmaceutisches Central Halle,	*Ph. C. H.*
Archiv der Pharmacie,	*Arch. Ph.*
Neues Repertorium f. die Pharmacie,	*N. Rep.*
Neues Jahrbuch f. die Pharmacie,	*N. Jahrb. Ph.*
Dingler's Polytechnisches Journal,	*Polyt. J.*
Vierteljahresschrift für Pharmacie,	*Viertelj. Ph.*
Zeitschrift für analytische Chemie,	*Zeits. An. Ch.*
Pharmaceutische Zeitschrift für Russland,	*Ph. Zeits. Russl.*
Œsterreichische Zeitschrift für Pharmacie,	*Œst. Z. Ph.*
Journal de Pharmacie et de Chimie,	*J. de Ph.*
Répertoire de Pharmacie,	*Rép. Ph.*
Gazette Médicale de Paris,	*Gaz. Méd.*
Journal de Chemie Médicale,	*J. Chim. Méd.*
Comptes rendus de l'Academie des Sciences.	*Compt.*

Among events of pharmaceutical interest which have occurred during the recess of the Association, we must mention first in order the appearance in print of the United States Pharmacopœia for 1860; it will be unnecessary to dwell on the changes and additions which this revision has brought about, as the volume, which has been published in cheap and convenient style, must by this time be in the hands of all your members, and because the

Editors of the book have appended comparative tables of the deviations from the Pharmacopœia for 1850, embracing all that could be mentioned in regard to the matter.

The Pharmacopœia of Great Britain, which has likewise been in course of preparation for several years past, is likewise supposed to be nearly matured for publication, though it is only quite lately that the whole system of weights and measures has had to undergo a new revision.

The Association will note with pleasure the substantial mark of appreciation which its labors have called forth from our brethren in Great Britain, consisting in their endeavor to establish a body similar to yours, and of a more general character than the Pharmaceutical Society of that realm. We welcome this as one of the most gratifying signs that the good seed of our labors has there also fallen upon fertile soil.

The revision of the French Codex and the discussion of projected innovations in the pharmaceutical societies of France, still continue at the present date, and are alluded to in the subjoined pages.

The North and South-German branches of the German Apothecaries' Union are paving the way for a German Pharmacopœia as the legal standard; the Committees, having the matter in charge, consist of some of the ablest of our German colleagues, and are at present engaged in preliminary compilation, etc., of the material offered by the Pharmacopœias of the several States belonging to the German Confederation.

Several of our German cotemporaries have undertaken the task to clear up the mysteries or mystifications of some proprietary medicines sold in Germany and elsewhere at extravagant rates, and to the great detriment of legitimate pharmacy. An undertaking of this kind in our country might be attended with benefit; at the same time, however, it is to be feared, that the very opposite of the interests of science and humanity would almost to a certainty be the gainers, as it would only add to their notoriety.

Appended to this paper is the report of the Corresponding Secretary, on the condition of Pharmacy in the United States, and also, on a resolution passed at your last meeting in reference to the production of tartar.

The different chapters of the report follow in the same order as those of the preceding one. The compilation of recent publications is probably not as extensive as it could be made; American literature, especially, appears to be represented by a small number of works; but more complete lists will be found in our several pharmaceutical and medical periodicals.

The annotations of your Reporter are in brackets; it will be noticed that the contents of foreign periodicals, which have as yet not appeared in print in the American Journals, are more fully treated than those of which the reverse is the case.

BOOKS IN THE ENGLISH LANGUAGE.

The Vegetable Products of the World in common use. By Th. Cr. Archer. London, Routledge.

The useful Plants of Great Britain. By Pierpont Johnson and Sowerby. London, Kent.

The Parlour Gardener. A Practical Treatise on the House Cultivation of ornamental Plants. London. Low & Co.

On the various contrivances by which British and foreign Orchides are Fertilised by Insects, and on the good effects of intercrossing. By Ch. Darwin. London. J. Murray.

Genera Plantarum ad Exemplaria Imprimis in Herbariis Kewensibus servata definita. By G. Bentham and J. Hooker. Vol. I. Pars. I. (Ranunculaceæ—Comaraceæ). Williams & Norgate.

Fragmenta Phytographiæ Australiæ. By Mueller. London, Baillière.

The Plants Indigenous to the colony of Victoria. By Mueller. Vol. I. ib.

A plain and easy account of British Fungi. By M. C. Cooke. London, Hardwicke.

A Natural History of new and rare Ferns. By E. J. Lowe. London, Groombridge.

British Ferns. By Thos. Moore, (new ed.) London, Routledge.

Chocolate and Cocoa. By Ch. Hewett. London, Simpkins & Co.

Illustrations of the *Nueva Quinologia* by Pavon. By John Elliot Howard. London, Reeve.

A Practical Handbook of Medical Chemistry. By. J. E. Bowman, ed. by Ch. L. Bloxam, (4th ed.) London, Churchill. Amer. Edition. Philadelphia.

Chemistry. By W. Th. Brande, and Alf. S. Taylor. London. J. W. Davies. (Amer. Edition. Philadelphia. Blanchard & Lea.)

Air and Water, their Impurities and Purification. By H. B. Condy. London. J. W. Davies.

The art of Perfumery. By G. W. Piesse, (3d ed.) London. Longman.

A Handbook of Volumetrical Analysis. By R. H. Scott. London. Longman, Green & Co.

First Book in Chemistry. By W. Hooker. New York. Harper & Bros.

The Correlation of Forces. By W. R. Grove, (4th ed.) London.

Phosphorescence. By T. L. Phipson.

Systematic Handbook of Volumetric Analysis. By F. Sutton. London.

The Principal Baths of Germany, France and Switzerland. By Dr. E. Lee. London. Churchill & Sons.

Manual of Geology, (with special reference to American Geological History). By Prof. James D. Dana. Philadelphia. Th. Bliss & Co.

First Outlines of a Dictionary of the Solubilities of Chemical Substances. By Frank H. Storer. Cambridge. Sever & Francis.

A Manual of Chemistry, Descriptive and Theoretical. By William Odling. London. Longman.

Report on the Chemical Analysis of Grapes. By Ch. M. Wetherill. Washington. 1862. Agricultural Department.

GERMAN WORKS.

Darstellung und Beschreibung saemmtlicher in der Pharm.

Borussica aufgeführten officinellen Gewaechse, etc. Von Prof. Otto Berg, und C. F. Schmidt, artist. (Not completed.) Leipzig. A. Foerstner.

Analysen (*Keys*) zu den natürlichen Ordnungen der Gewächse. Von Prof. A. Schnitzlein. (New edition.) Erlangen, Palm and Enke.

Die Oesterreichische Militaer-pharmacopöe. (Commentary to the 4th edition.) Von Prof. W. Benatzik. Vienna. Braumüller.

Die praktischen Arbeiten im chemischen Laboratorium. Von Dr. C. Bischoff. Berlin. Springer.

Flora universalis, in colorirten Abbildungen. Von Dr. D. Dietrich. (New series, 2d number.) Jena. Suckow.

Die Pharmacopöe für das Kurfuerstenthum Hessen und therapeutischer Commentar. Von C. P. Falck. Marburg. Elwert.

Kritischer Gang durch die Pharmakopöe des Koenigreichs Hanover. Schmorl u. Seifeld.

Icones analyticæ fungorum. Von Prof. Herm. Hoffmann. Giessen. Rickher.

Lexikon der chemisch technischen u. Pharmaceutischen Praeparate. Von Hoffmann und (edited by) Dr. E. Winkler. Dresden. Klemm.

Leitfaden fuer die agrikultur-chemische Analyse. Von Prof. F. Krocker. Breslau. Gosohorsky.

Floræ Columbiæ terrarumque adjacentium specimina selecta. Von Dr. H. Karsten. (1st vol. concluded.) Berlin. Duemmler.

Tabulæ phycologicæ. (Nos. 106—110.) Von Prof. F. T. Keutzing. Nordhausen. Fersterman.

Die nützlichen und schaedlichen Schwaemme. Von Prof. H. O. Lenz. Gotha. Fienemann.

Das Mikroskop u. seine Anwendung. Von Prof. Herm. Schacht. (3d rev. edition) Berlin. G. W. F. Mueller.

Medicinisch-pharmaceutische Botanik, nebst Atlas. Von Prof. J. B. Henkel. Tuebingen. Laupp.

Lehrbuch der medicinisch-pharmaceutischen Pflanzenkunde. Von J. R. Linke. Leipzig. Baensch.

Synopsis plantarum diaphoricarum. Von Dr. D. A. Rosenthal. (Completed.) Erlangen. Enke.

Handbuch der medicinisch-pharmaceutischen Botanik. Von E. Winkler. Leipzig. Baensch.

Untersuchung der reifen Samen der Ross-Kastanie. (*Æsculus Hipp.*) Von Prof. F. Rochleder. From Ber. Wien. Akad. Vienna. C. Gerold's Son.

Pharmakologisch-therapeutisches Handbuch fuer Aerzte, etc. Von G. A. Bingel. Erlangen. Enke.

Kommentar zu der vii. Ausgabe der Pharm. Borussica. Von H. Hager. Lissa. Guenther.

Die Verlobung in der Bleikammer. Von Angelicus Vitrioloel.' Breslau. Maruschke u. Berendt.

Commentar u. Woerterbuch zu allen Pharmacopœen. Von E. Hennig. Dresden. Klemm.

Leitfaden bei qualitativen u. quantitativen Loeth rohr versuchen. Von Bruno Kerl. Clausthal. Grosse.

Die natürlichen Waesser in ihren chem. Beziehungen zu Luft u. Gesteinen. Von Prof. H. Ludwig. Erlangen. Enke.

Lehrbuch der allgemeinen u. speciellen Arznei mittel lehre. (3d ed.) Von Schoemann. Jena. Mauke.

Anleitung zur Analyse der Asche von Pflanzen und org. Substanzen. Von Dr. G. C. Wittstein. Munich. Palm.

Arzneiu. Gift gewaechse. Von H. Wagner. Bielefeld. Helmich. (In numbers, with fol. plates).

Cryptogamen-Herbarium. Von H. Wagner. (2d ser. No. 3 u. 4. Lichens. Bielefeld. Helmich.

Annales botanicæ systematicæ. Von G. G. Walpers. Synopsis plantarum phanerogamicarum novarum omnium per annos 1851—1855 descriptarum. auct. Carol. Mueller. Leipzig. Abel.

Die deutschen Giftpflanzen. Von L. Heros. Leipzig, Keil.

Einleitung in die Krystallographie. Von Herm. Kopp. Braunschweig. Vieweg u. Sohn.

Die Eichen Europas u. des Orients. Von Th. Kotschy. Olmutz. Hœlzel.

Der Kreislauf des Lebens. Von Jos. Moleschott. Mainz, v. Zabern.

Die Spongien des adriatischen Meeres. Von Oscar Schmidt. Leipzig. Engelmann.

Pharmacopœa Borussica. Editio vii. Berlin. Decker.

Praeparata chemica et pharmaca composita in pharmacop. Boruss. editione vii. non recepta. Von J. E. Schacht. Berlin. Gaertner.

Ammoniak u. Ammonium-gruppen, organische u. anorganische. Von C. Boedeker. Goettingen. Vandenhoek u. Ruprecht.

Ueber den Einfluss von Arznei mitteln auf die Ausscheidung von Hansaure. Von H. V. Bosse. Dorpat. Glaeser.

Ueber Blut-krystalle (Hæmatocrystallin). Von A. Boettcher. Dorpat. Glaeser.

Anleitung zur Pruefung chemischer Arznei mittel. Von Ad. Duflos (2 ed.) Breslau. Hirt.

Technik der pharmaceutischen Receptur. Von H. Hager. (2d ed.) Lissa. Guenther.

Handbuch der Toxicologie, nach Van Hasselt. Von Th. u. A. Husemann. Berlin. G. Reimer.

Anweisung zur Bereitung des Weinstein u. der Weinstein saeure. Von. J. C. Leuchs. Nuernberg. Leuchs & Co.

Die Chemie in ihrer Anwendung auf Agrikultur u. Physiologie. Von J. von Liebig. Braunschweig. Vieweg.

Die aetherischen Oele. Von Jul. Maier. Stuttgart. Neff.

Anleitung zur qualitativen u. quantitativen Analyse des Harns. Von Neubauer u. Vogel (4th ed.) Wiesbaden. Kreidel.

Lehrbuch der Pharmacologie. Von Prof. C. D. Schroff (2d ed.) Wien. Branmueller.

Tabellen zur qualitativen chem. Analyse. Von L. Stahl. Berlin. Springer.

Die Normalgaben der Arzneien nach dem Unzen u. Grammgewichte. Von F. L. Strumpf. Leipzig. C. F. Winter.

Kompendium der Arznei mittel lehre. Von R. Weinberger. (2 ed.) Wien. C. Gerold's Son.

Anleitung zur chem. Analyse u. Tabellen. Von H. Will (6th ed.) Leipzig. C. F. Winter.

Die Photographie als Huelfsmittel mikroskopischer Forschung. Von. J. Gerlach. Leipzig.

Verzeichniss der auf einer Reise in Nord Amerika beobachteten Saeugethiere. Von Max, Prinz zu Wied. Berlin.

Die Fundamental-Eigenschaften des Sauerstoffs u. Wasserstoffs. Von W. Heldt. Berlin. Hickethier.

Die Beziehungen zwischen Dichte u. Zusammensetzung bei festen u. liquiden Stoffen. Von Dr. C. Boedeker. Leipzig. Arnold.

Chemische Schule der Pharmacie. Von Fr. Doebereiner. Leipzig. Neumeister.

Das Kaffein in chemischer, physiologischer u. therapeutischer Hinsicht. Von Dr. W. Brill. Marburg.

Woerterbuch zu den Pharmakopöen. Von H. Hager. Lissa. Guenther.

FRENCH BOOKS.

De l'intervention de la chimie dans l' explication des effets thérapeutiques des médicaments. Par A. Béchamp. Montpellier. Boehm et fils.

Dosage approximatif de la chaux contenue dan la magnésie calcinée. Par Ch. Brame. Tours.

Sur le chauffage au gaz dans les laboratoires de chimie. Par Chancel et Diacon. Paris. Masson et fils.

Considérations sur l'emploi de la glycérine pour l'administration du sulfate de quinine. Par A. Chautard. Clermont.

Notice sur l' extrait de salsepareille. Par Delondre et Dublanc. Paris, impr. Martinet.

Précis d'analyse chimique qualitative. Par Gerhardt et Chancel (2d ed.) Paris. Masson et fils.

Etude sur les preparations galéniques de Quinquina. Par V. A. Orrillard. Paris, imp. Thunot & Co.

Traité des plantes médicinales indigènes. Par A. Bossu. Paris. Bailliere et fils.

Du Fucus vesiculosus, de ses propriétés fondantes et de son emploi contre l' obésité. Par Duchesne-Duparc. Paris. Baillière et fils.

Du café, son historique, son usage, son utilité, ses altérations, ses succédanés et ses falsifications. Par Chevallier. Paris. Baillière et fils.

Etude chimique su les Oleacées. Par H. Enon. Angers. Cosnier et Lachèse.

Le *Chamærops excelsa* (Thunb.) sa patrie, etc. Par J. Gay. Paris, impr. Martinet.

Etude sur la Scammonée de Montpellier. Par G. H. Laval. Montpellier. Gras.

Le cacao et le chocolat considérés au point de vue botanique, chimique, physiologique, agricole, commercial, industriel, et économique. Par A. Magnin. Paris. Guillaumin & Co.

L'olivier, sa culture et ses produits. Par Raibaud l' Ange. Paris. Bouchard-Huzard.

Notions sanitaires sur les végétaux dangereux, etc. Par Ach. Comte. Paris. Charpentier.

De l' opium indigène extrait du pavot oeillette. Par Decharme. Amiens. impr. Yvert.

Histoire générale des plantes et herbes, avec leurs propriétés hygiéniques et médicinales. Par Leon. Fucus (n. ed.) Lonsle-Saunier, impr. Damelet.

Abrégé pratique sur la culture de l' opium indigéne. Par Alph. Oleph. Paris, impr. Walder.

Plantes utiles de la Nouvelle-Calédonie. Par E. Vieillard. Paris, impr. Martinet. (Extrait des Ann. des Sciences naturelles.)

De la digitale pourprée comme agent antipyrétique. Par H. E. Coblentz. Strasbourg, impr. Christophe.

De l' olivier, sa culture, son fruit, et son huile. Par J. Reynaud. Paris. Lacroix.

Falsifications et autres défectuosités des principales substances médicamenteuses et alimentaires. Par N. Gille. Bruxelles.

De la recherche des alcalis organiques dans les cas d' empoisonnement. Par A. Gaultier de Claubry. Paris, impr. Martinet.

Essay sur les huiles. Par Lefebvre. Amiens.

Sur la morphine et les preparations d' opium, (Thèse). Par E. A. Petit. Paris, impr. Thunot & Co.

Recherches sur l' origine et le siège de l' amidon animal. Par Poincaré. Nancy, impr. Raybois.

Etude sur la recherche, les caractères distinctifs et le dosage des alcaloides organiques naturels. Par Alf. Valser. Paris, impr. Thunot & Co.

De la glycérine, de ses applications à la chirurgie et à la médecine. Par Demarquay. Paris. Asselin.

Annuaire pharmaceutique. Par O. Reveil. Paris. Baillière et fils.

De l' ergot de froment, des ses propriétés médicales et sus avantages sus le seigle ergoté. Par Ch. Carbonneaux Le Perdriel. Montpellier, Boehm et fils.

PHARMACY.

APPARATUS AND GENERAL OBSERVATIONS.

Aspirator. Carey Lea has contrived a combined aspirator and blower for laboratory use, which is constructed on the principle of the Catalon blast and a modification of Sprengel's blower. See Am. J. Sc. xxxiv. 245. Ch. N. 164. The whole is exceedingly simple and very convenient in evaporating or distilling certain fluids, or for blowpipe analysis, or fusing.

Ether displacer. Jacobi has slightly improved Mohr's metallic extractor; a number of projections on the inside cause the condensed fluid to collect over the substance to be displaced. Polyt. J. clxiv. 343.

Steam apparatus. F. A. Wolff disputes the practicability of the remarks made by Wollweber (Proc. 1862, p. 89). N. Jahrb. Ph. xvii. 214.

J. Nickles describes the apparatus in use in his laboratory; it is a modification of that of Weltzien in Carlsruhe. J. de Ph. xlii. p. 182.

Digester. Fleury gives a description and illustration of his ether-digester, on the plan of Schiel's. J. de Ph. xli. p. 282.

Reuleaux's press consists of an iron skeleton frame in which the pressing plate is moved horizontally by a crank wheel. It is highly recommended, in the German periodicals.

Besides the above, a cheaper press constructed of wood and worked in the same manner by two screws, is described and recommended by Hager. Ph. C. H. 1863, No. 10.

Powders. A table of the loss sustained by powdering most ordinary drugs and chemicals is published by C. Ohme, a manufacturer, in Arch. Ph. clxi. 219.

According to Hérouard, powders, especially cantharides, keep much better in loose packages, than when hermetically protected from the air. (J. de Ph. xlii. 98. N. Rep. xii. 20.) As is noticed in Am. D. Circ. vii. 90. Prof. Buchner, Sen., had made the same observations.

Wollweber recommends that aloes and myrrh be powdered in winter-time. Am. D. Circ. vi. 167.

Gehe & Co. state that, owing to the mildness of the past winter, they had been obliged to send assafœtida required for powdering to a glacier. (Preis courant f. April, 1863). Hager remarks that this and other gum resins may be obtained sufficiently dry for the purpose by enclosing them with burnt lime in close boxes and exposing to the ordinary temperature on upper shelves. Ph. C. H. 1863. No. 18.

In the Societé de Pharmacie of Paris the reports and discussions on matters connected with the forthcoming new edition of the Codex have been continued. The report on

Mineral waters was presented by Chatin, Poggiale and Lefort (J. de Ph. xli. p. 370). It proposes formulas for a large number of waters, as well as saline and other products; that on *Oils, Liniments, Plaster,* etc. by Duroziez, Comar, and Vuaflart (J. de Ph. xlii. 112). On

Tinctures and spirits two reports were made, the first by Buignet, Gobley, and Deschamps, the second by the same in connection with Schaeuffele, Desnoix, Blondeau fils, and Adrian. A long discussion took place on the merits of the process of percolation, a number of papers embodying the result of numerous experiments were read, and the society finally recommended that the tinctures of absynth, belladonna (leaves), cicuta, datura, digitalis, hyoscyamus, pyrethrum, quassia, gray cinchona, rhatany, and senna be prepared by displacement with 60 p. c. alcohol (1 to 5), those of canella, yellow and red cinchona and valerian with 80 p. c. alcohol; that the tinctures of arnica (flowers), inula, aloes, catechu, colchicum, black hellebore, guaiac, gentian, ipecacuanha, musk, rhubarb and squills be prepared by maceration for 15 days, with 60 p. c. alcohol; those of amber, castoreum, colchicum seeds, calumba, ginger, cloves, jalap, nux vomica, saffron, vanilla and (?) valerian with alcohol of 80 p. c. Compare J. de Ph. xlii. Rép. Ph. xix.

Reports on *cerates, pommades, and ointments* were made by Vuaflart, Duroziez, and Comar (J. de Ph. xlii p. 353), on *Elementary substances* by Bouis, Vée, and E. Baudrimont (ib. p. 304), on *Metallic oxyds* by Mialhe, Dalpiaz and Desnoix (ib. p. 471), and by Duroy, on *Extracts*, which likewise underwent a lengthy discussion (ib. p. 502); that on *External remedies* by Dubail, Leconte and Eug. Lebaigue (ib. xliii. p. 62), on *Mineral acids* by E. Hottot, Roussin and Ducour (ib. p. 198), on *infusions* and aqueous preparations generally by Gobley, Duroziez, and Decaye (ib. p. 385).

Silvering glass surfaces. John Cimeg has patented a process in England, in which the silver is precipitated by tartrate of potassa and soda. Ph. J. Trans. (2) iv. 79. Am. D. Circ. vi. 169. *Cleaning glass-vessels.* For this purpose Natanson recommends buckwheat or the covering of the seeds. Ch. C. B. 1853. No. 11.

Frigorific mixture. Reissig recommends a mixture of snow and powdered (?) sulphocyanide of potassium. Polyt. C. B. 1862. 326. N. Jahrb. Ph. xvii. 250.

Skinning of seeds. Lemoine beats them up for 15 to 20 minutes with 15 p. c. of their weight of sulphuric acid, then adds half the weight of water, leaving the whole together for a short time while constantly stirring. They are then washed, the last traces of acid being removed by soda. J. de Ph. xliii. p. 222.

Paste of a cheap kind is prepared by Weichert from equal parts of sifted ashes and rye flour, or 5 parts of flour and 3 of soot. N. Jahrb. Ph. xix. 252.

Glue. Elsner recommends the addition of sifted ashes to common glue when fused, so as to form a mass of the consistence of varnish. N. Jahrb. Ph. xix p. 251.

Preservation of infusions. Folberth reports excellent results from the application of Schroeder and Dusch's method for preserving organic solutions so especially with the infusion of senna. Œest. Zeits. Ph. N. Jahrb. Ph. xviii. 2. Am. D. Circ. vii. 5.

Preservation of syrups. Lachambre recommends to leave the bottles after filling, at first inverted, so as to saturate the corks. Rép. Ph. xix. 263.

PULVERES.

Hydrargyrum cum creta. R. Haines communicates remarks on the composition of this preparation and the changes it undergoes by exposure in the climate of Bombay. It sustains a considerable loss of mercury, and of nine samples all contained suboxyd in variable quantity, four contained no mercuric oxyd, one 6½ p. c., and three 25 p. c. and more. Ph. J. Trans. (2) iv. 363. Am. J. Ph. xxxv.

AQUÆ DESTILLATÆ.

Aqua Amygdalarum amararum concentrata. Oberlaender gives directions for the preparation of this water, and states that if it be preserved in 2 or 4 ounce vials in the cellar, protected from ammoniacal vapors, it would keep for years unchanged. N. Jahrb. Ph. xix. 81.

S. Feldhaus likewise publishes researches on bitter almond water. Arch. Ph. clxiv. p. 33. The results arrived at by Mayet in reference to this and cherry-laurel water agree with those of Feldhaus. (J. de Ph. xlii. p. 62.) Adrian believes that it is not advisable to recommend a definite time for the collection of the leaves to be used for distillation. (Ib. xlii. 177.)

SOLUTIONS.

Liquor Brominii comp. J. Lawrence Smith gives a formula for this preparation now largely used in the army hospitals as a disinfectant of the atmosphere. Am. J. Med. Sc. April, 1863, p. 385. Am. D. Circ. vii. 70. Am. J. Ph. xxxv. It consists of one troy ounce of bromine dissolved with 160 grains of bromide of potassium in enough water to make four fluidounces.

Liquor Plumbi Subacetatis, as stated before by Griepekoven, and now again in the report of a committee of the Société de Pharmacie of Bruxelles, is freed from copper by digestion with metallic lead. Rép. Ph. xix. 87.

Liquor Ferri nitratis. Procter suggests that Kerr's preparation contained an excess of iron, and owed to this its greater efficiency as compared with the pale solution now employed. Am. J. Ph. xxxviii. Am. D. Circ. vii. 71.

Aquæ minerales. Formulas for the preparation of Karlsbad, Friedrichshall, Marienbad, Pullna, and Selters water are communicated by Marquis. N. Jahrb. Ph. xix. 98. Am. D. Circ. vii. 90.

Glycerolatum Ferri Iodidi is prepared according to Veza by triturating 35 parts of iodine with 70 of iron and 400 of glycerine. He prepares the syrup of the iodide by adding 4 parts of the glycerolate to 200 parts of syrup of gum and 30 of orange flower water. J. de Ph. xlii. 338.

Glycerolatum Alöes Haselden prepares by mixing aloes 1 part with glycerine 8 parts; used externally in lichens and eczemata. N. Rep. xi. 76.

Glycerolatum Chloroformi. Debout uses the following application in pruritus of the mouth in teething infants: Glycerin 60 parts, chloroform, tinct. saffron, of each one or two parts. Bull. thérap. Rép. Ph. xix. 209.

Collodion. F. Luchs gives a formula for preparing guncotton and collodion, not stated for which purpose. Polyt. J. clxvi. p. 62. H. Hager describes the preparation of *pyroxylin,* with which he designates gun-cotton proper, the penta nitropyroxylin of Béchamp, and *colloxylin,* the tetra nitril, more soluble in ether-alcohol. Ph. C. H. 1863, No. 23. Am. D. Circ. vii.

Collodium Ferratum. A writer in Œst. Zeits. Ph. (Am. D. Circ. vii. 161) recommends the administration of ferric chloride (1 part) in collodion (6 parts) as hæmostatic.

Alkaloids in Oil. Attfield describes a method for dissolving alkaloids more conveniently in fats and oils. It consists in converting them first into oleates. Ph. J. Trans. (2) iv. 388.

Am. D. Circ. vii. 70. Rép. Ph. xix. [It is noted both in Am. D. Circ. and Rép. Ph. that the same method has been before recommended by Tripier.]

Glycerolates of Extracts. T. S. Wiegand recommends that the narcotic extracts be mixed with glycerine for external exhibition. Am. J. Ph. xxxv. 117.

TINCTURÆ ET SPIRITUS, ETC.

Spiritus Formyli Terchloridi, a chloric ether proposed by Th. Skinner, consists of 5 drachms of chloroform in a pint (imp.) of alcohol (·838). The dose is from ½ to 2 ounces. Dublin Med. Press. Am. J. Med. Sc. July, 1862, p. 215.

Spiritus Sinapis. M. Barbet prepares it by macerating 2 parts of flour of black mustard with 4 parts of water, and then distilling with one part of 86 p. c. alcohol, one-seventh being drawn over. J. Chim. Méd. Am. J. Ph. xxxv. 313.

Elixir Pepsini Comp. This is prepared from pepsin 5 parts, Syr. Cort. Aur. 50 p., Tinct. Rhei Vin. 10 p., Tinct. aromat. 3 p., Tinct. amaræ 5 p., Spir. Vin. Gall. 50 p. Ph. C. H. 1862, p. 576.

Rennet wine. Procter gives a practical formula for its preparation in Am. J. Ph. xxxv. p. 35. Am. D. Circ. vii. 21.

Elixir Cinchonæ Ferro-phosphoricum of W. C. Bakes; a permanent preparation is given in Am. J. Ph. xxxv. 228. Am. D. Circ. vii. 106.

EXTRACTA FLUIDA.

Fluid extracts. For much information on the history and nature of these preparations compare a paper read before the N. Y. College of Pharmacy by J. M. Maisch. Am. D. Circ. vi. 180, vii. 4.

Daubrawa prepares his *Essentiæ* by infusing the drugs repeatedly, in boiling water, until exhausted, evaporating in the water bath, and exhausting the extract with alcohol until the latter becomes no longer colored. The tincture, after filtering, is reduced by distillation to a certain bulk, and then mixed with syrup previously clarified with 1-20th of the sugar of tartaric acid, the acid being removed by lime and alcohol. The Extracta aquosa which he formerly proposed, will not keep. Substances which do not allow of an admixture of alcohol, he recommends should be preserved in an atmosphere of carbonic acid, and describes an arrangement for the purpose. Viertelj. Ph. xi. 326.

Extractum Rosæ fluidum. Procter's formula is to percolate 16 troy ounces of red rose petals in fine powder with dilute alcohol, drawing off at first 12 fluidounces, and afterwards 1½ pints, to be reduced to 4 fluidounces. Am. J. Ph. xxxv.

Extractum Cinchonæ fluidum (*aromaticum*). E. R. Squibb communicates a formula for this extract to take the place of the tinctures and elixirs; it will be found in Am. J. Ph. xxxv. 230. Am. D. Circ. vii. 105.

Extractum Cocculi fluidum. Procter directs to bruise and sift the seeds (16 ounces) from the capsules, and to displace the former with 60 p. c. alcohol (12 ounces). The capsules are to be digested for some hours at 130° F. in 2 pints diluted alcohol, and the whole is then thrown into the displacer; two pints of tincture are drawn, which are evaporated to 4 ounces to make 16 ounces of extract. Am. J. Ph. xxxv. 112. Am. D Circ. vii.

Extractum Leptandræ fluidum, Procter likewise prepares with 60 p. c. alcohol, adding towards the end one-fourth of sugar. Am. J. Ph. xxxv. p. 112. Am. D. Circ. vii.

Extractum Cascarillæ fluidum. Procter directs cascarilla in fine powder, and first 70 p. c., then dilute alcohol. Ibidem.

Extractum Cocci fluidum is to be prepared from cochineal in moderately fine powder and dilute alcohol, the extract to measure half strength. Ibidem.

EXTRACTA.

Extractum Lactucæ virosæ. Duroy, in the discussion before the Société de Pharmacie of Paris, states that the coagulum carries down most of the active principle of the juice. J. de Ph. xlii. p. 507.

Extractum Belladonnæ. Bergot has noticed, and it is confirmed by Isid. Pierre, that this extract deposits a considerable quantity of oxalate of magnesia. J. de Ph. xlii. 507.

Extractum Valerianæ. Landerer obtained from 40 ounces of the root 7½ to 8 ounces of alcoholic extract. N. Jahrb. Ph. xvii. 211.

Extractum Fuci vesiculosi. Dannecy prepares it by displacing the dried wrack in coarse powder with 86 p. c., and expressing it with 54 p. c. alcohol; it is to represent 15 parts of the fucus. Bull. thérap. J. de Ph. xlii. p. 434.

Extracts. Schweizer gives a general review of the best modes of preparing them from different drugs. Ch. N. 146 and follow.

With reference to the discussion before the London Ph. Society about narcotic extracts, the Am. D. Circ. (vii. 9) publishes experiments made by Auer [and originally given in Buchner's Repert. (3) iii. p. 44 (1849)] on belladonna to show that the leaves are by no means the most active part of the plant.

SYRUPI.

Syrupus Ferri Carbonatis. H. N. Draper gives a formula, according to which the carbonate is precipitated from sweetened solutions, washed with sweetened water, and finally dissolved in stronger solution of sugar. Dubl. Med. Press. Dec. 3, 1862. Am. J. Med. Sc., January, 1862. Am. J. Ph. xxxv. 171.

Syrupus Mannæ Ph. Borus. Wollweber uses only 4 ounces of manna to 18 ounces of infusion of senna. Arch. Ph. Sept., 1862. Am. D. Circ. vii. 25.

Syrupus Fuci vesiculosi. Pottier gives a formula for an extract and syrup. 150 p. coarsely powdered moss, are to be macerated for four or five days, in 460 p. of 14 p. c. alcohol, expressed, and again to be treated in the same manner. The tincture evaporated to 280 parts, by the addition of 370 p. sugar, makes the syrup; evaporated to the proper consistence, the tincture yields 16 to 18 p. c. of very deliquescent extract. Bull. Soc. Ph. Bruxelles.

Syrupus Copaibæ. Montané prepares by agitating 100 parts of balsam with 1000 of hot syrup, and decanting. J. de Ph. xi. p. 364.

Syrupus Tolutani and Syr. Terebinthinæ, are to be prepared in the same manner.

PILULÆ.

Pilulæ Copaibæ. J. M. Maisch reviews the various modes of forming this oleosresin into pills; as superior formulas, he recommends those using spermaceti, as proposed by Geisler, or wax, according to J. F. Simon, for excipient. Am. J. Ph. xxxv. 13. A. D. Circ. vii. 22.

Pilulæ Ferri. Guilelmo states that the hardening of iron pills may be prevented by the addition of sugar. As a good formula, he recommends the following: Ferri pulv. ℥ss, Ferri Ammoniati ʒi. Myrrhæ ʒi, Ext. Trifol. fibr. ℥ss, Sacch. pulv. ℥ss, Ext. Taraxaci ʒii, Pulv. Althææ q. s. Ft. pil. gr ii. Consp. pulv. Cinnamom. Viertelj. Ph. xii. 220.

Pilulæ Ferri Iodidi. Bihot rubs together equivalent proportions of iodide of potassium and ferrous sulphate with a little alcohol, then adds gum arabic (?) and honey. Rèp. Ph. xix. 235.

EMPLASTRA.

Emplastrum Calaminaris is recommended by Desmalines for dressings, in place of lead plaster; he fuses together 10 parts of white wax with 50 of Empl. resinæ and 6 of calamine. Gaz. Méd., 1862, No. 11. N. Rep. xi. 84.

Emplastrum Plumbi Carbonatis. Schmidt gives some remarks on this plaster; he finds a temperature not exceeding 250° F. necessary. N. Jahrb. Ph. xix. 21.

Emplastrum Adhesivum. W. Wollweber uses a mixture of lead plaster and oleate of lead, made with oleïc acid, as basis. N. Jahrb. xviii. 95. Am. D. Circ. vi. 167.

Emplastrum Cantharidis perpetuum. Wollweber recommends sandarach in the place of mastich. N. Jahrb. Ph. xviii. 101. Am. D. Circ., vi. 167.

Emplastrum Stibiatum. Mialhe directs: Burgundy pitch 40 p., rosin 20, yellow wax 20, turpentine 5, olive oil 5, tartar emetic 10 parts. Bull, Thérap. Rép. Ph. xix. 247.

Emplastrum Gelatinæ has come into use, which is spread on linen; mode not stated. Compare Am. J. Ph. xxxv. 321.

UNGUENTA, CERATA, ETC.

Unguentum Mezerei. R. B. Sheridan proposes its preparation with fluid extract. Am. J. Ph. xxxiv., 392.

Unguentum Hydrargyri Nitratis. J. S. Lester gives a formula in which too much acid is used; olive oil and wax are substituted for neatsfoot oil and lard. Am. J. Ph. xxxiv. 394.

Unguentum Hydrargyri. E. Renoult describes as new the preparation of this ointment with the aid of ether. J. Chim. Méd. Am. J. Ph. xxxiv. 511.

According to A. Overbeck, the fresh ointment contains no oxyds of mercury, while after being kept, some mercurous oxyd is found in solution in the fat, but none mechanically admixed. The absorption of the mercury on the skin is an endosmotic process, the presence of an oxyd being irrelevant. Arch. Ph. clix. 6.

Ludwig proposes the use of precip. metallic mercury, prepared by passing sulphurous acid through asolution of mercurous nitrate. Arch. Ph. clx. p. 1.

Ophthalmic Ointments. W. W. Cooper advocates the use of butter of cacao as basis. Lancet, June 2, 1862. Am. D. Circ. vii. 26.

Ceratum Simplex. A. Laillier advocates the use of vegetable wax in place of beeswax. Rép. Ph. xix. 231.

Unguentum Digitalis,
Unguentum Sabinæ and
Unguentum Belladonnæ. The Wurtemberg Pharmacopœia, directs a tincture from 1 p. of the herb to be macerated with 4 p. of alcohol, the tincture to be mixed with 5 p. lard, and the whole to be dehydrated on the water-bath. Lessing finds it preferable to prepare the tincture, by displacement. Ph. C. H., 1863. No. 19.

Plasma Picis liquidæ. Brady recommends: Warm glycerin 6 ounces, starch 2 drachms; stir up, and add tar 6 ounces, heat to boiling, then strain. Dublin M. Press, Sept. 10, 1862. Ph. J. Trans. (2) iv. Am. D. Circ., vii. 7.

TROCHISCI.

Drying of Troches. T. S. Wiegand describes a contrivance for this purpose, in Am. J. Ph. xxxv. 117.

Trochisci Glycyrrhizæ. Wollweber gives the following formula, to be used in dry weather only. Skinned sweet almonds 2 ounces, sugar nine ounces, powd. liquorice root two ounces, powd. extr. liquorice four ounces, powd. marshmallow two drachms, Ol. Anisi, Ol. Fœniculi, of each 8 drops, mucil. acaciæ 2 ounces, to make 6 grain troches. Arch. Ph. clxi. p. 218.

Trochisci Glycyrrhizæ c. Ammoniæ Muriate. Wollweber's formula is: almonds 2 oz., sugar 5 oz., liquorice 4 oz., ammon. muriat. 2 oz., liquorice root 3 oz., marshmallow 2 drachms, Ol. Anisi et Fœniculi, *aa.* 8 drops, mucil. 2 oz; to make 6 grain troches. Ibidem.

A convenient formula for the preparation of troches is given by a writer in Zeits. N. D. Ap. V. 1862, p. 21. Am. D. Circ. vii. 26. Dugend prepares the mass for Trochisci Morphiæ in particular from 25 p. sugar in fine powder, and 9 p. of starch which are made into a pilular mass with 90 p. c. alcohol, and then expressed between paper; the cake is then again moistened with an alcoholic solution of the alkaloid. Viertelj. Ph. xii. 221.

VARIA.

Extract of Malt. (Extr. Hordei Malti). For the preparation of extract of malt as a medicament, see a note from Œst. Zeits. Ph., 1862, in Am. D. Circ. vi. 138.

Medicated Cigarettes. Dr. W. E. Bowman contributes a paper on medicated cigarettes, in Canada Lancet, May 15, 1863. Am. J. Ph. xxxv. 363. Am. D. Circ. vii.

Pastilli ministrorum are 8 grain troches, made of orris root 10 parts, fennel seed 6, aniseed 10, liquorice root 15, extr. liquor. 120, sugar 900 parts. Ph. C. H., 1863, 23.

Species Hispanicæ. Stpt. Dulcam., flor. cyani, fol. lauri, rad. calami, cinchonæ, rad. tritici rep., lign. guaiaci, santali, sassafras, *aa* 5, herb. menth. crisp., althææ, fol. farfari, rubi id., hederæ, *aa* 10 p., Siliq. dulcis, caric., sem. hordei excort., *aa*

15 p. M. minut. concis. et cont. D. in 3 oz. packages. Ph. C. H 1863, 13.

Mistura Chloroformi. Th. Skinner prepares chloroform julep (?) by shaking together ½ drachm of chlorof. with 20 ounces of water. Dose ½ to 2 oz. Dubl. M. Rep. Am. J. Med. Sc., July 1862, p. 215.

Selters Water for fountains. Water 10,000 p., cryst. carb. soda 10, chloride sodium 5, chloride calcium 3, chloride magnesium 1½, sulphate soda 1, liquid glass 3 parts; to be charged with carbonic acid. Hager. Ph. C. H., 1863. No. 21.

Codliver oil Jelly. Dufourmantel dissolves 2 parts of gelatine in sufficient water, then stirs in 30 p. of the oil, at a temperature not exceeding 87° F., and finally adds 4 drops of oil of anise; syrup or extracts may be added. Gaz. Méd. 1863, 14. N. Rep., xi. 131.

Suppositories. W. C. Bakes gives a series of formulas for medicated suppositories made with cacoa butter, sometimes with the addition of wax, which are designated and prescribed by numbers. Am. J. Ph. xxxv. 228. Am. D. Circ., vii. 106.

Pessaries. Dr. T. H. Tanner communicates a number of formulas (Iodide of lead and belladonna; mercury; acetate of lead and opium; zinc and belladonna; iodide of potassium and extr. conii; tannin and catechu), with butter of cacao, and olive oil or glycerin as vehicle. Ph. J. Trans. (2) iv. 514, from Trans. Lond. Obstetr. Soc. Am. D. Circ., vi. 106.

Feu belge (*Ol. Morrhuæ vesicans*), is prepared by digesting 1000 p. codliver oil with 15 to 30 p. of cantharides and euphorbium. Rép. Ph. xix. 96.

Oil of Indian Hemp, (*Ol. Cannabis Ind. coctum.*) Grimault digests the tops finely bruised in oil of hempseed, by the aid of the waterbath. It is used as external application in rheumatism. J. de Ph. xliii. 239.

Atropia-paper. Streatfield recommends for use, in diseases of the eye, green tisue-paper, saturated with sulphate of atropia, in such manner that one-fifth cubic inch represents one minim of a solution containing two grains to the ounce. Ph. J. Trans. (2) iv. Am. J. Ph. xxxv. 175. Am. D. Circ. vii. 7

MATERIA MEDICA.

VEGETABLE DRUGS.

RANUNCULACEÆ.

Hydrastis Canadensis, L. W. S. Merrell's remarks in your last Proceedings are republished in Am. J. Ph. xxxiv. p. 495, as being addressed to the editor, and are commented on by the latter; also by F. F. Mayer, ib. xxxv. 99.

Coptis trifolia. J. M. Maisch thinks it probable that this plant contains berberina, which is afterwards found in it, together with a colorless alkaloid, by F. F. Mayer, Am. J. Ph. xxxv. 97.

Coptis teeta has been examined (the rhizoma) by J. D. Perrins, who finds berberina in it to the amount of 8½ per cent. J. Ch. Soc. xv. p. 339. Ph. J. Trans.

Aconitum. Hirtz finds that extract from the root possesses the peculiar properties of the plant more than 20 times as strongly as that from the leaves; aconitia differs in its effects somewhat from the preparations of the plant, and does not produce spasmodic symptoms as is the case with the latter. From Gaz. de Strasb. in Cannst. Jahresb., 1861, p. 255.

C. Schroff has published a thorough pharmacognostical and therapeutical history of the various species of aconite, which is given at some length in Cannst. Jahresb. f. 1861, and in the new edition of his Handbook. He insists on the existence of an acrid principle, which is, however, wanting in A. lycoctonum. The alcoholic extract on keeping forms grape sugar, which may be a product of the decomposition of one of the active principles.

A case of poisoning by the administration of Extr. Aconiti in place of Extr. Absinthii, is given in Ph. J. Trans. (2) iv. 283. In the case of an infant which had been poisoned by aconite, and had fallen into a comatose condition, tincture of nux vomica in small doses produced almost immediate reaction, followed by abundant emesis, and a perfect recovery. Viertelj Ph. xii. 287.

In Am. D. Circ. vii. 41, a fatal case of poisoning by aconiti fol. is mentioned, which had been administered in place of hoarhound.

Experiments on the action of aconite and aconitia, and some other narcotics, are communicated by J. H. Salisbury, in Am. J. Med. Sc., Oct., 1862, p. 413. [Except in one instance, it is not stated which tincture of aconite was used for the experiments, nor by what process the aconitia was prepared.]

Nigella Sativa L. According to J. Lepine, the seeds contain 24·7 per cent. of an orange-colored oil, possessing a camphoric odor, congealing at 3° F., and of spec. gr. = ·920. J. de Ph. xl. p. 16.

BERBERIDACEÆ.

Podophyllum peltatum L. F. F. Mayer shows that the substance formerly eliminated by W. Hodgson, Jr., is berberina. The rhizome likewise contains a colorless alkaloid, a saponaceous, and a volatile principle. Am. J. Ph. xxxv. 97. Am. J. Trans. (2) iv. 516. J. M. Maisch confirms the presence of berberina in this plant, and that the precipitated resin may according to its mode of preparation, contain that alkaloid. Ib. xxxv. 210.

Jeffersonia diphylla, Pers. Bentley gives the history of this plant. Ph. J. Trans. (2) iv. 104. F. F. Mayer finds that it contains a small quantity of berberina, besides a colorless alkaloid, and a saponaceous principle previously noticed by E. S. Wayne. Am. J. Ph. xxxv. 97. Ph. J. Trans. (2) iv. 516.

Caulophyllum thalictroides Michx. A description, etc., of this plant is given by Bentley, in Ph. J. Trans. (2) iv. 52. The rhizome of this plant, according to F. F. Mayer, contains a colorless alkaloid and a saponaceous principle. Am. J. Ph. xxxv. 97. Ph. J. Trans. (2) iv. 516.

WINTERACEÆ.

Cortex Winteranus. D. Hanbury states with reference to Henkel's remarks (Proc., 1862, p. 94) that the true bark of *Drymis Winteri* is imported from Chili, New-Grenada, and

Mexico, and that D. Chilensis, DeC., D. Granatensis, L. Fil., and D. Mexicana are the same species. The bark is known in Chili as *canelo*, and in English commerce as Pepper-bark. The Winter's bark of commerce is derived from *Cinnamodendron corticosum* Miers (Cannellaceæ), a tree of Jamaica, known there as *wild cinnamon*, which name is also given to Canella alba; an infusion of the bark of the latter gives a black precipitate with tincture of iodine, that of Cinnamodendron cortic, a brown one. N. Rep. xi. 241. Compare *Cannellaceæ*.

MENISPERMACEÆ.

Menispermum Canadense L. The rhizome, according to J. M. Maisch, contains a colorless alkaloid with some berberina. Am. J. Ph. xxxv. 301.

SARRACENIACEÆ.

Sarracenia purpurea L. Some remarks on the medicinal properties of this plant, and of S. heterophylla, S. rubra, S. Drummondii, and S. psytacina, are communicated by C. H. Cleaveland. A. D. C. vi. 122. While in America the trials with this plant as a remedy in varioloid have been discontinued since the report of Prof. R. P. Thomas to the Surgeon-General, (A. D. Circ. vii. 10), there is still considerable discussion kept up in England on its account, some of the reports being as decidedly in its favor as that of others against it.

PAPAVERACEÆ.

Papaver somniferum. An abstract from a discourse before the Chemical Society, on the chemistry of opium by T. Anderson, is given from J. Ch. Soc. xv. and Ch. News, in Am. J. Ph. xxxiv. 519.

S. S. Allen read a paper before the Pharm. Society, on the cultivation of Egyptian opium; the species raised along the Nile is P. album. The Arab name for poppy is Abon nome (father of sleep), of opium, *fiuso*. Ph. J. Trans. (2) iv. 199. Am. J. Ph. xxxv. 60. Some remarks on the culture of opium in China are copied from the *Ausland* in N. Rep. xii. 80.

R. Haines describes the extraction of morphia and other crystalline constituents of opium from personal experience with large quantities of rejected materials, and gives an improved method for determining both morphia and narcotina, founded on that of O'Shaughnessy. Ch. N. 166 ff. Am. J. Ph. xxxv. 266.

E. A. Petit, in an essay before the *Société de Pharmacie*, describes some variations of the methods for discovering morphia, and for testing opium, all of the latter by precipitation with ammonia; in one of them the precipitate is redissolved by an excess, in another by bicarbonate of potassa, and thus purified. In the deposite from Vinum opii there is no tannin from the canella and cloves in combination with alkaloids. He concludes that all preparations of opium might be replaced by solutions of morphia. J. de Ph. xliii. p. 44.

Fronmüller has made some clinical experiments with Wittstein's metamorphia; the effects were at least equal to those of morphia. Viertelj. Ph. x. 262. H. Hager suggests that this is the non-crystallisable modification which morphia assumes under certain circumstances. Ph. C. H. iii. 86.

J. E. Schacht gives a method for the assay of opium which is stated to yield accurate results, but is very circumstantial; 5 or 10 grammes of powdered opium are exhausted with water, the inspissated and decolorised solution precipitated by ammonia, the precipitate after drying treated with ether, finally redissolved in alcohol, and the morphia obtained by crystallisation. Arch. Ph. clxiv. 119.

The poppy plant according to Walz, may also yield succinic acid. N. Jahrb. Ph. xv. 22.

Several remarkable cures of cases of poisoning by opium, by means of belladonna, and a table of similar cases, and of treatment with opium of poisoning by belladonna, are communicated by W. F. Norris. Am. J. Med. Sc. Oct. 1862, p. 395.

W. S. Duncan reports a case of poisoning with opium, which recovered under the treatment with belladonna. Am. J. Med. Sc., July, 1862, p. 277. The case of an infant which was poisoned, and recovered under similar circumstances, is given by

Dr. Blake. Pacific M. S. Journ., April 1862. Am. J. Med. Sc., July, 1862, p. 280.

Sanguinaria Canadensis Lin. R. Bentley gives a pharmacognostical and therapeutical description of this plant, its rhizoma and rootlets. Ph. J. Trans. (2) iv. 263.

Chelidonium majus. Walz believed Zwenger's chelidoninic acid to be identical with succinic acid. Reinsch had before found succinic acid in the herb, and Erlenmeyer and Lewinstein found mainly malic acid, which partly passed into succinic acid. Cannst. Jahr. pro 1861, p. 56. Walz has extracted the same acid from *Escholzia Californica*, and *Teucrium Scorodonica.*

Argemone Mexicana Lin. The seeds, according to J. Lepine, yield 18 per cent. of a mild orange-colored oil, which remains still fluid at 8° C. J. de Ph. xl. p. 16.

FUMARIACEÆ.

Dicentra formosa Borkh. (*Corydalis f.* Pursh.) is described by R. Bentley among the American remedies lately introduced in England. Ph. J. Trans. (2) iv. 353.

UMBELLIFERÆ.

Ferula erubescens Boiss. as before stated by Buhse, is now confirmed as the source of galbanum, by Borcszczow, who does not believe that Lindley's Opoïdia galbanifera had an existence. Another umbellifera yielding the gum to some extent is the *Ferula Schaïr.* Cannst Jahr. 1861. A. D. Circ. vii. 127.

Ferula Persica Willd., according to the same author is *not* the source of sagapenum. Ibidem.

Scorodosma fœtidum Bunge (*Asafœtida Disgunensis* Kæmpf., *Ferula Asafœtida* Lin.) is the true source of asafœtida. Borcszczow mentions *Narthex asafœtida* Falc., *Ferula asafœtida* Buhse (*Dorema asafœtida* Loftus), *Ferula teterrima* Kar. & Kir., and *F. Persica* Willd., as secondary sources.

(For a paper on the preparation of asafœtida for medicinal use, see Ch. Dr., April, 1863. Am. J. Ph. xxxv. 356.)

Dorema ammoniacum Don., according to the same author (his researches are republished in Mem. Acad. St. Petersb. (7) iii. 8, p. 1, and an abstract in Cannst. Jahr. pro 1860, p. 47 ff.) is the true source of ammoniacum, and is identical with *Diserneston gummiferum* Spach & Jamb., *Dorema Aucheri* Buhse, *D. paniculatum* Kar. & Kir., *D. aureum* Stocks are synonyms, while *D. Aucheri* Boiss., *D. glabrum* Fisch. & Meyer, *D. robustum* Loftus, and *D. odoriferum* Loftus, are probably distinct species.

Laman recommends bitter almond water to remove the odor of asafœtida from mortars, and tobacco smoking for the mouth. N. Jahrb. Ph. xviii. 1. Arch. Ph. clxiii. 179.

Apium petroselinum Lin. The ethereal extract prepared by Joret and Homolle, and named apiol, is again drawn into notice. Ph. J. Trans. (2) iv. 269. Am. Ph. xxxv. p. 83.

Conium maculatum, Linn. A medico-legal examination in a case of poisoning by conia, made by C. H. Lehmann, Reissner, and Voley is given in Arch. Ph. clvii. 257. Cannst. Jahr. pro 1861, p. 262. The alkaloid was eliminated by Stas' method.

According to Hirtz (Gaz. Strasb. 1861. Cannst. Jahrb. pro 1861, p. 255.) the extract of the fruit of conium is 20 times as strong in its effects as that of the leaves.

ARALIACEÆ.

Panax quinquefolium. F. F. Mayer notices the existence of a saponaceous, acrid principle in ginseng. Am. J. Ph. xxxv. p.

CORNACEÆ.

Cornus mascula, Linn., according to W. Stein, contains rutin (melin) (see *Org. Chem.*), and the bark of *Cornus sanguinea*, probably paracarthamin. J. prakt. Ch. lxxxv. 351, lxxxviii. p. 280.

CUCURBITACEÆ.

Bryonia alba, Linn. Walz and Cucuel have found that bryonitin is a mixture of a fat and a fatty acid. N. Jahrb. Ph. xvi. 8. Am. J. Ph. xxxiv. 333.

Momordica charantia Lin. According to J. Lepine the seeds contain a solid fat which fuses at 45° C. J. de Ph. xl. 16.

Trianosperma ficifolia Mart., *Alobora de Mato* (Brezil.) *tryugá* (*de pimento comari*). The root, which is an emeto-cathartic, is used in native practice for dropsy, elephantiasis, etc. Parts of the plant have before been examined by Herberger, Souillé, and the root now by Th. Peckolt. It contains a considerable proportion of nitre, a little of a non-crystallisable principle (scarcely soluble in ether, not precipitated by lead, but by tannin and baryta, soluble in alkalies, from which solutions acids throw down a precipitate) powerfully drastic in small doses; *trianospermina* (Herberger's tayugina?) and trianospermitina, two cryst. alkaloids; a resin soluble in ether (beta-resin), and one insoluble in ether, soluble in alcohol (alph. resin); the latter has a slight purgative effect in doses of 2 grains, the beta-resin produces catharsis in doses of one grain. Arch. Ph. clxii. p. 104.

CRUCIFERÆ.

Sinapis nigra. Ludwig and Lange confirm the existence and nature of Bussy's myronate of potassa; they obtained from $\frac{1}{5}$ to $\frac{1}{2}$ p. c. of the same, mixed with a little lime. The empirical formula $KC_{20}\,H_{38}\,NSO_4\,O_{19}$ resolves itself into $KO_2\,SO_2$ + $C_6\,H_{10}$ S, CyS (sulphocyanide of allyl, oil of mustard) and $2(C_{12}\,H_{14}\,O_{14}$, glucose.) Compare oil of mustard under *Org. Chem.*

CANELLEÆ.

Calophyllum inophyllum Lamb. The seeds, according to J. Lepine, contain 54·3 p. c. of a greenish yellow, bitter oil, which congeals at 50° C., and has a specific gravity=·942. J. de Ph. xl. 16.

Canella alba. Prof. Henkel doubts whether there is any difference between Cortex Canellæ and the winter's bark of commerce. N. Rep xi. p. 1. D. Hanbury (compare *Winteraceæ*) shows that they are undoubtedly distinct. The source of the winter's bark of commerce is

Cinnamodendron corticosum Miers. Compare as above.

SAPINDACEÆ.

Paullinia sorbilis. Guarana has been examined by Fournier, who finds in it tannate of caffeina, tannin, a fatty greenish acid oil, a solid and a liquid volatile oil, of aromatic taste, and soluble in dilute alcohol, and another volatile oil, which turns pink in the air, and is soluble in 90 p. c. alcohol. J. de Ph. xxxix. p. 291.

Æsculus hippocastanum. The comprehensive analysis of the seeds, with which Rochleder and others of the Vienna Academicians have been occupied since 1852 is at last published. A resumé of the results will be found in Am. J. Ph. xxxv. p. 290, Ch. N. The original paper is published in Ber. Wien. Akad. xlv. Ch. C. B. 1863, p. 17 ff. J. prakt. Ch. lxxxviii. p. 1.

STERCULIACEÆ.

Sterculia fœtida Lin. J. Lepine states that the seeds contain 30 p. c. of a pale yellowish oil, which remains liquid at 30°, and has a spec. grav. = ·932. J. de Ph. xl. p. 16.

LYTHRACEÆ.

Lawsonia inermis. This plant, the leaves of which are largely used in Mahomedan countries as *henna*, is treated on in an essay by Abd-El-Aziz-Herraouy. He has extracted from them a substance which he calls henno-tannic acid. J. de Ph. Rép. Ph. xix. 317.

MELIACEÆ.

Melia Azedarach Lin. The seeds yield 41. 5p. c. of a yellowish oil, possessing an alliaceous odor, and a bitter taste; it congeals at 70°, and has a spec. grav.=·921. J. Lepine in J. de Ph. xl. p. 16.

CEDRELACEÆ.

Cedrela febrifuga Blume. W. Lindaw finds in the bark a non-crystallizable, bitter principle, oxalic and citric acids, a phlobaphenoid substance, and a tannin resembling kino-tannic acid. Viertelj. Ph. x. 388.

EUPHORBIACEÆ.

Croton Eluteria Bennett, of the Bahamas (Andro, Elutheria and Long Island,) according to W. F. Daniell (Ph. J. Trans. (2) iv. 144 and 226) furnishes the ordinary cascarilla bark of commerce. It is the *Clutia Eluteria* Linn. and Woodville, and its bark the Cortex Ilatheria Linn., and the species which R. Browne and Pereira call *Sea-Side Balm.*

Croton Sloanei Benn. is the C. Eleuteria of Wood and Bache and most botanists, a native of Jamaica, and should be termed *Caribean cascarilla.*

Croton lucidum Linn. furnishes the false sweetwood bark, or false Bahama cascarilla.

Croton cascarilla Benn., the willow-leaved cascarilla, Clutia cascarilla Linn., is a native of the Bahama Islands; in New Providence it is almost extinct.

Croton lineare Jacquin, is indigenous to most West Indian islands, and is known there as the Spanish, or wild, Rosemary bush. It is described by Woodville as Croton cascarilla.

Rottlera tinctoria. J. Erdmann has analyzed several specimens of Kamala, one of which contained over 40 p. c. of sand, and 10 p. c. of ferric oxyd. Pure Kamala appears to contain from 6 to 10 p. c. of sand, 1 or 2 p. c. of ferric oxyd, and over 60 p. c. of colored resin soluble in ether. Arch. Ph. clxiv. p. 239.

Jatropha glauca Vahl. According to J. Lepine (J. de Ph. xl. p. 16) the fruit contains a yellowish oil which congeals at 50°, and has a spec. grav.=·963. That of *Jatropha glandulifera* Roxb. possesses the same properties.

A case of poisoning by Ol. Crot. Tiglii, which was dispensed in place of Syr. Scillæ, occurred at Belfast, Ireland. Ph. J. Trans. (2) iv. 379.

Mercurialis annua Linn. The herb and seeds, according to E. Reichardt, yield by distillation with lime a volatile alkaloid, *mercurialina;* its sulphate is soluble in absolute alcohol; the alkaloid itself is of an oily consistence, and in odor resembles both conia and nicotia; in the air it becomes resinified and assumes the consistence of butter. Most of the salts are readily soluble in water. The platinum salt forms only after standing for some length of time. Ch. C. B. 1863, p. 65.

Tamarix mannifera. Berthelot has examined the manna from Sinai, obtained from this tree; it contains no mannite. Compt. liii. 583. J. Prakt. Ch. lxxxv. 317.

CELASTRACEÆ.

Euonymus atropurpureus. The bark of the root has been examined by W. T. Wenzell, who found in it a crystallizable, bitter principle soluble in alcohols, but not in ether; several resins, a crystallizable acid precipitated by subacetate of lead; citric, malic and tartaric acids in combination with lime and magnesia; a substance resembling asparagin; pectin, sugar, etc. Am. J. Ph. xxxiv. 385.

Euonymus Europæus Linn. Kubel has discovered a crystallizable principle in the cambium; it fuses at 182°, and has a general resemblance to mannite, even in its composition, but not in the form of the crystals and the fusing point. J. prakt. Ch. lxxxv. 372. N. Jahrb. Ph. xvii. 339. Ph. J. Trans. (2) iv. 376. Am. D. Circ.

L. Gilmer suggests that it is dulcit. Ann. Ch. Pharm. cxxiii. 375.

[The name *euonymite,* which Kubel has applied to this saccharid, should be expunged, as *euonymin* has long since been used by J. Riederer to designate an active, bitter principle of the seeds (Buchner's Rep. xliv. p. 169.) The same saccharine principle, no doubt, was the sugar described by V. Grundner (Rep. xcvii. p. 315).]

J. Lepage, who states (Rép. Ph. xix. 366) that nothing has as yet been published on the seeds that might indicate the emeto-cathartic principle, has analyzed them. The ashes of the seeds, according to him, contain no alkaline carbonates, [?.] Glucose is said to be present to the amount of 12½ p. c., and ferments readily. The discovery of the oil, etc., had been anticipated by Riederer and Grundner.

ERYTHROXYLACEÆ.

Erythroxylon Coca Lamb. Reis proposes to use coca leaves in various forms of preparations to produce the specific effects. Rép. Ph. xix. 330.

Cocaïna, according to Lossen, when heated with hydrochloric acid, splits into benzoic acid and a new base, ecgonina, $C_{18}H_{16}NO_6$. Another liquid and volatile alkaloid has been detected in the mother-liquors, and named *hygrina;* its odor resembles that of trimethylamina. Ann. Ch. Pharm. cxxi. 372. Am. J. Ph. xxxiv 406. Am. D. Circ. vi.

v. Scherzer contributes notes to the pharmacological history of coca. N. Rep. xi. 399.

RUTACEÆ.

Peganum Harmala. Fritzsche has continued his researches on the derivatives of the alkaloids contained in this plant. Bull. Acad. St. Petersb. v. J. Prakt. Ch. lxxxvi. 100.

Ailanthus glandulosa Desf. The bark is recommended by Dupuis and Hetet as superior to other remedies in tænia. Rép. Ph. xix. 296.

XANTHOXYLACEÆ.

Toddalia acculeata Pers. Lopez root, according to F. Schnitzer, contains, besides the usual constituents, oxalic and citric acids and two resins, of which one is soluble in alcohol and insoluble in ether, while with the other the reverse is the case. Viertelj. Ph. xi. p. 1.

Xanthoxylon Clava-Herculis Linn. J. D. Perrins shows that Xanthopicrite, the bitter principle extracted by Chevallier and Pelletan, is berberina. J. Ch. Soc. xv. 339. Ph. J. Trans. (2) iv. 464.

X. fraxineum Willd. R. Bentley gives a description of this prickly ash and the properties and uses of its bark. Ph. J. Trans. (2) iv. 399.

Ptelea trifoliata Linn. is likewise described by R. Bentley. Ph. J. Trans. (2) iv. 494.

CORIARIACEÆ.

Coriaria ruscifolia. Many parts of this Australian plant, like those of C. myrtifolia, are poisonous, as the berries which resemble blackberries, and the young shoots, which have the appearance of asparagus. See a paper by L. Lindsay, read before the British Association at Cambridge, 1862. M. T. & Gaz. 1863, i. 512.

ROSACEÆ.

Quillaya Molina DeC. Theod. Martius (N. Rep. xi. 337), gives a description of the bark, its active principle, and of an extract prepared from it, and reviews the history of saponin, with a table of the plants supposed to contain that principle. Compare Am. D. Circ. vii.

F. A. Flückiger gives some account of the occurrence and the structure of the bark, especially with reference to the crystals of gypsum contained in the splint, etc.; and also some remarks on the occurrence of salts of lime in other plants. Viertelj. xi. 193.

Amygdalus communis Linn. Researches on the distilled water of bitter almonds are published by S. Feldhaus. Arch. Ph. clxiv. 33.

Brayera anthelmintica Kunth. C. Bedall has submitted Pavesi's Koossin to examination. It is a white or yellowish, indistinctly crystalline substance of an acrid bitter taste, soluble in strong alcohol and ether, and pure alkalies, is *not* a glucoside, and contains 71·5 p. c. C. and 10 of H. Very active in doses of 1 to 2 scruples. Viertelj. Ph. xi. 207.

LEGUMINOSÆ.

Acacia catechu. Sacc has examined catechu; he found a glucoside and tartaric acid. Compt. Dec. 1861, p. 1102. Am. D. Circ. vi. 86.

Glycyrrhiza glabra Linn. J. Banter shows that liquorice root may be advantageously raised on a small scale. Zeits. Œst. Ap. V. 1863, No. 8. Ph. C. H. 1863, p. 794.

Lupinus. The root, according to Autier, contains a saponaceous principle, which makes it applicable for the same purpose as soap root and soap bark. Ch. C. B. 1863, p. 319.

Robinia pseudo-acacia. Compare *Robinin*, Org. Chem.

Melilotus officinalis Willd. According to Zwenger and

Bodenbender, the odorous substance in this plant is not pure coumarin, but a compound of the same with *melilotic acid*, from which it is separated by treatment with ammonia. Ann. Ch. Ph. cxxvi. 257.

Guilandina Bonducella Linn. Johnson recalls attention to the use of the seeds as a tonic, they being employed in Bengal in conjunction with chirayta. Rép. Ph. xix. 296. [According to Lindley (Fl. Med. p. 156), they are used together with the bark of Cedrela toona Roxb.]

Copaifera. Tridon recommends copaiva and storax in croup and diphtheritis. Gaz. Méd. Paris. N. Rep. xii. 78.

Hæmatoxylon Campechianum Linn. Desmatis has been very successful with an ointment of equal parts of fat and Extr. Hæmatoxyli, as a disinfectant applied to ulcers and gangrenous wounds. N. Rep. xi. 278.

Albizzia anthelmintica Courbon. C. Thiel has examined musena-bark; it possesses an acrid taste, and contains a colloid substance resembling saponin. N. Rep. xi. 97. Am. D. Circ. vii. 77. N. Jahrb. Ph. xviii. 374. Am. J. Ph.

Myrospermum frutescens Jacquin. D. Hanbury mentions the legumes of the guatamare tree of Trinidad, used as a stomachic. This tree yields upon incision a resin closely resembling balsam of Tolu. Ph. Trans. (2) iv. 108.

Pongamia glabra V. The seeds, according to J. Lepine, yield 27 p. c. of a dark yellowish oil of a bitter taste and unpleasant odor, which congeals at 8° C., and has a density = ·945. J. de Ph. xl. p. 16.

Trifolium. Clover hay has been successfully employed by Dr. Condie in whooping cough. Am. J. Med. Sc. July, 1862, p. 278. Am. D. Circ. vi.

Cytisus laburnum Linn. T. S. Gray ascribes to this plant, especially the seeds and bark, three narcotic principles, neither of which acts as an emetic except in large doses; the crude drug possesses no irritant properties. Edinb. Med. J., May, 1862. Am. J. Med. Sc., Oct. 1862, p. 512.

Physostigma venenosum is the botanical name given by Balfour to the papilionaceous plant from which the ordeal bean of Calabar is derived. See D. Hanbury's Paper in Ph.

J. Trans. (2) iv. 559. Am. J. Ph. xxxv. Am. D. Circ. vii. Also notes on its use.

Butea frondosa Roxb. The seeds, according to J. Lepine, contain 16 p. c. of a yellowish nearly tasteless oil, which congeals at 10° C., and has a density = ·917. J. de Ph. xl. p. 16.

ANACARDIACEÆ.

Semecarpus anacardium Linn. J. Lepine states that the nut, Malacca bean, contains but a small quantity of a sweet oil; the pericarp on the other hand contains 32 p. c. of a vesicating oil, which turns black in the air, is readily soluble in ether, and has a spec. grav. = ·991. J. de Ph. xl. p. 16.

Cassuvium pomiferum S. The cashew nuts contain 41·8 p. c. of a sweet oil (sp. grav. ·916). the pericarp 35 p. c. of an oil like that of Semec. anac. L., sp. gr. 1·014. Ibidem.

Comocladia dentata. Notes on the action of this Cuban tree, the guao, resembling that of Rhus toxicod., are communicated in Am. D. Circ. vii. 122.

Schinus mollis Linn. Landerer has prepared from the berries a substance resembling piperina. All parts of this tree contain an acrid milky juice, and the bruised seeds act on the skin like mustard. Am. J. Ph. xxxv. 157.

CUPULIFERÆ.

Quercus. The cork of commerce, according to C. De Candolle, is obtained from *Q. occidentalis*, in the south-western part of France, and in Portugal, and from *Q. suber*, in the south-eastern portion of France, in Italy, Algeria, and the Mediterranean islands. Chem. Drug. Aug. 1862. Am. J. Ph. xxxiv. 541.

Quercus infectoria. Berthelot has had under examination Kurdistan manna, obtained from this tree, and which, like the Sinai manna (from Tamarix mannifera,) contains no mannite. Compt. liii. p. 583. J. Prakt. Ch. lxxv. 317.

URTICACEÆ.

Artocarpus incisa Linn. f. The use of the bread fruit is described in N. Rep. xi. 224.

Dorstenia contrayerva Linn., from which the true contrayerva root is derived, is very abundant in Trinidad, where it is also largely used. See note by D. Hanbury, Ph. J. Trans. (2) iv. 107. Am. J. Ph. xxxiv.

Cannabis Indica. Momeema is the resinous exudation from the stalk, leaves, and flowers of the plant, and is collected and used in the East in the same manner as opium; it is not to be confounded with hadjih. N. Rep. xii. 79. Rép. Ph. xix. 394. S. de Luca communicates his personal experience of the action of hadjih. J. de Ph. xlii. 396. Rép. Ph. xix. 206.

MYRICACEÆ.

Myrica cerifa Linn. The bark, according to G. M. Hambright, contains tannin, tartaric and oxalic acids, and a saponaceous principle differing somewhat from saponin; in an impure state its solution on the addition of ammonia passes through several colors, from green and red to yellow. Am. J. Ph. xxxv. 193.

PIPERACEÆ.

Piper methysticum Forst. Cuzent claims to have discovered a crystalline principle which he calls Kavaïne, prior to Gobley (J. de Ph. xxxix. 202. Ph. J. Trans. (2) iv. 85). But Guibourt and Dubail, in a report on this subject to the Société de Pharmacie state that Morson is the original discoverer of this substance, which he found in 1844, and then considered to be nearly related to piperina. J. de Ph. xli. p. 215.

Piper nigrum Linn. A. Strecker finds that the piperic acid resulting from the splitting of piperina, is by the action of alkalies converted into another acid, which, on account of its similarity to catechic acid, he has called proto-catechic acid, and which is isomeric with morinic acid. Ann. Ch. Pharm. cxviii. 281.

Cubeba officinalis. A falsification of cubebs, most likely with the fruit of Piper anisatum, is noticed by Groenewegen. Cannst. Jahr. for 1861, p. 24. Am. D. Circ. vi. 181. Also an instance of adulteration with the immature fruit of Rhamnus amygdalinus, R. Oleoides, and R. saxatilis is noticed by Reupke and Wiggers. Ibidem.

BALSAMACEÆ.

Liquidambar orientale Mill. The liquid storax of commerce, according to A. Kovalevsky, and probably also dragon-blood, contain metastyrole in place of part of the styrole. Ann. Ch. Pharm. cxx. 66. Ch. C. B. 1862, p. 127.

THYMELACEÆ.

Daphne mezereum Linn. The seeds (*Semen cocognidii*) yield from 40 to 52 per cent. of fatty oil extractible by alcohol. Th. Martius, in Arch. Ph. clx. p. 39.

CHENOPODIACEÆ.

Chenopodium vulvaria Linn. Dessaignes had before obtained trimethylamina (propylamina) by distilling the herb with caustic potassa. Wicke now shows that this alkaloid is constantly being given off by the living plant. Ann. Ch. Pharm. cxxiv. 338.

POLYGONACEÆ.

Chrysophanic acid, according to Grothe, (Ann. Ch. Phys. cxiii. 190) is also the coloring principle of Rumex obtusifolius, R. patientia, R. alpinus, R. maritimus, R. palustris, R. aquaticus, and R. hydrolapathum, and of

Polygonum fagopyrum Linn. Nobbe and Siegert endeavor to prove that chlorine, especially in combination with potassium and calcium is necessary for the fructification of buckwheat. Ch. C. B., 1863, p. 296. Buckwheat or the covering of the seeds is an excellent means for cleaning vessels from fat or resin. Ph. Zeits. Russl., 1862, p. 192. Ch. C. B., 1863, p. 176.

ERICACEÆ.

Ledum palustre Linn. Frœhde finds that the oil does not deposit any stearopten; caustic potassa extracts a volatile acid. Distillation in a current of hydrogen yields an isomere of oil of turpentine, boiling at 160° C.; at 240° C. an oxygenated oil passes over, of the composition of ericinole. J. prakt. Ch. lxxxii. 181.

VACCINACEÆ.

Oxycoccus macrocarpus Pers. The fruit has been examined by G. W. Eldridge, who finds in it over 3 per cent. of citric acid. Am. J. Ph. xxxv. 205.

STYRACEÆ.

Symplocos racemosa. The bark is known in commerce as Cortex de Lotour. Landerer describes under that name a bark, more likely that of Strychnos Nuxvomica, which is imported into Greece from Africa. Viertelj. Ph. x. 219.

CONVOLVULACEÆ.

Ipomœa Jalapa Nutt. Schacht describes a method for determining the percentage of resin in the tubers, which must be 10 according to the Prussian Pharmacopœia of 1863. The powder is first displaced with water, and afterwards with alcohol; the residue from the evaporation of the tincture gives the weight of resin. Arch. Ph. clxiv. p. 124. Am. D. Circ. vii.

RUBIACEÆ.

Cephaëlis ipecacuanha Rich. A case of chronic dysentery successfully treated with ipecac, is given by W. Gayton, in Lond. M. T. and Gaz., 1862, ii. p. 323.

G. Pécholier communicates experiments with small doses of the root on animals, proving the sedative action. Rép. Ph. xix. 247.

Reich gives the botanical and chemical history of ipecacuanha, and the preparation of crude and pure emetina. Compare *Org. Chem.* Arch. Ph. clxiii. 193. The root contains 4½ per cent. of fermentable sugar, and a small quantity of oxalic acid.

Chiococca densifolia Mart. Rochleder withdrew the formula previously given by him and Hlasiwetz for caïncic acid; it is a saponaceous principle ($C_{120}H_{91}O_{53}$) like saponin, a compound of a carbohydrate resembling kinovin, and of saccharides and fatty acids; one of the products of its dissociation by acids is the former chiococcic acid, which retains with great tenacity the last equivalent of carbohydrate, possesses the formula $C_{72}H_{56}O_{18}$, and is a homologue of the corresponding product of the splitting of saponin; *caïncetin* ($C_{60}H_{16}O_4$) is likewise a homologue of sapogenin. Wien. Akad. Ber. xlv. N. Rep. xi. 387.

Cinchona. Calisaya bark according to Delondre (Cannst. Jahrb. pro 1861, p. 41) contains the alkaloids in the proportion of 2·8 per cent. of sulphate of quinia, 0·2 per cent. of sulphate of quinidia, and 0·3 per cent. of sulphate of cinchonia.

China rubra de Quito: $\overset{+}{\text{Chi}}\ SO_3$ 2·2 per cent., and $\overset{+}{\text{Chid}}\ SO^3$ 0·2 per cent., $\overset{+}{\text{Cin}}\ SO_3$ 1·1 per cent. $\text{Ch}\overset{+}{\text{i}}\text{na}$ de Lagos: $\overset{+}{\text{Chi}}\ SO_3$ 0·004 per cent., $\overset{+}{\text{Cin}}\ SO_3$ 0·065 per cent.

China de Cusco flava yielded 0·08 per cent. of $\overset{+}{\text{Chi}}\ SO_3$, and cannot therefore be the bark examined by Pelletier & Corriol, which contained aricina.

The new Prussian Pharmacopœia, (Ed. vii. 1863,) requires Cort. Chinæ reg. with 3½ per cent. alkaloids. To determine its percentage, Schacht uses Rabourdin's method, but prefers caustic soda as precipitant, in which quinia is less soluble than in ammonia. Arch. Ph. clxiv. 122.

H. Hager protests against the standard of 3½ per cent., as too high, and shows Kleist's assay, from which it has been adopted, to be unreliable. He reviews the various methods of assay and recommends the following two as practicable: 1st. The powdered bark is exhausted in the water bath with very dilute hydrochloric acid, the solution evaporated to dryness, and the residue extracted with acidulated water; this is then filtered to remove cinchonic red, and the filtrate precipitated with ammonia. Or 2d. Equal weights of the powder and sulphuric acid, (sp. gr. = 1·82, or oil of vitriol with $\frac{1}{9}$ its weight of water and cooled) are thoroughly mixed in a porcelain mortar, avoiding all increase of temperature. After some hours the mass is diluted with water, 3 times the weight of powder, adding gradually up to 8 times the quantity. When it has settled, the solution is decanted, and the dregs thoroughly washed. After the evaporation of the washings, the whole solution, which is rarely colorless, is precipitated by caustic potassa; ammonia cannot be used, as it does not decompose the compound of the acid with the alkaloids. Ph. C. H., 1863, No. 26.

Interesting papers on the culture of cinchona have been published by C. R. Markham, (Ph. J. Trans. (2) iv. 27. Am. J. Pharm. xxxv.) as to that in India, as also by J. B. Nevins, (Ph. J. Trans. (2) iv. 549) and by Rochusen, relative to the cultivation in Java (Rép. Ph. xix. 324, 369).

There is a controversy between De Vry and C. R. Markham regarding the existence of quinia in the *Cinchona Pahudiana* How., which forms a great portion of the plants under cultivation in Java. Ph. J. Trans. (2) iv. 439, 440.

C. succirubra, raised in India, has already been tried in intermittents and proved successful. Lancet, Dec. 6, 1862. Ph. J. Trans. (2) iv. 329. Am. J. Ph. xxxv.

C. calisaya. De Vriy found kinovic acid in all parts of the plant, especially in the root, which contains between 2 and 3 per cent.; it is in inverse proportion to the quantity of alkaloids. J. de Ph. xxxviii. Arch. Ph. clxiii. p. 246.

COMPOSITÆ.

Carduus benedictus Linn. A. Frickhinger finds that the granular consistence of the extract is due principally to the presence of malate of magnesia with some malate of lime. N. Rep. xii. 128.

Silybum marianum Gærtn. (*Carduus marianus* Linn.) The seeds (achenia) are recommended by Dr. Lange in hæmatemesis and internal hæmorrhages generally. Un. Méd. Gironde. Ph. C. H., 1862, No. 13.

Lactuca sativa Linn. For a paper on the preparation of lactucin and other constituents of lactucarium, by A. Kromayer, vide Arch. Ph. clv. p. 3. Am. D. Circ. vi. 166.

Artemisia absynthium Linn. The bitter principle of wormwood, *absynthiin*, has been extracted and examined by A. Kromayer. Arch. Ph. clviii. p. 129. Am. D. Circ. vi. 22.

Arnica montana Linn. Walz examined the root, which on distillation yields volatile oil, capronic and caprylic acids; the watery extract contains a large proportion of tannin with little arnicin, less than is present in the flowers. This latter substance heated with caustic alkali yields a volatile oil, like the root itself, and butyric acid. N. Jahrb. Ph. xv. 329. Viertelj. Ph. x. p. 1.

Taraxacum dens leonis. Kromayer did not succeed in obtaining the taraxacin of Polex. The dried juice, which he calls *leontadonium*, contains a non-crystallisable bitter carbohydrate, taraxacerin, with 74·5 per cent., C. and 12·11 per cent. H. Arch. Ph. C.

Scorzonera Hispanica Linn., according to Group-Besanez, contains asparagin. Ann. Ch. Pharm. cxxv. Am. D. Circ. vii.

CORDIACEÆ.

Cordia Boissieri. A. DeC., the nacahuita of the Mexicans, has been indentified by Seeman, as the source of anacahuite wood. Ph. J. Trans. (2) iv. 271. Am. D. Circ. vii. Am. J. Ph. xxxv.

PLUMBAGINEÆ.

Statice latifolia Sm. A note on the root, which is used for tanning, will be found in Ph. J. Trans. (2) iv. 111. Am. J. Ph.

MYRSINEÆ.

Bacobotrys picta. Coudon describes this plant, the source of the Abyssinian *saoria*, the fruit. Ph. J. Trans. (2) iv. 23.

LABIATÆ.

Thymus serpyllum Linn. Joset recommends an infusion of this plant in whooping-cough. Rév. Therap., Fevrier, 1862. Am. J. M. Sc., Oct. 1862, p. 511. Am. D. Circ. vii.

Marrubium vulgare Linn. The bitter principle, marrubiin, has been extracted by A. Kromayer. Arch. Ph. clviii. 257. Am. D. Circ., vi. 134.

Nepeta glechoma Benth. Enz has examined the flowering herb without obtaining any bitter principle from it. Viertelj. Ph. x.

SCROPHULARIACEÆ.

For some remarks on the proximate principles of several plants of this family, (Digitalis purpurea, Scrophularia, Linaria, Antirrhinum, Veronica, Gratiola), see a paper by F. F. Mayer in Am. J. Ph. xxxv. Ch. N.

Digitalis purpurea Linn. Engelhardt announces the existence of a volatile alkaloid, which possesses the physiological properties of the leaves.

According to Hirtz, the relative strength of the extract from the seeds, is ten times that from the leaves. Cannst. Jahrb. for 1861, p. 255.

Homolle has published another essay on digitalis, in which he controverts many of his former results. Compare the above paper by F. F. Mayer. Cannst. Jahrb. for 1861, p. 260.

Several new instances of the successful treatment of delirium by tincture of digitalis, are stated in the British medical periodicals. Am. J. Med. Sc., July, 1862, p. 224.

Wunderlich recommends it in typhoid fevers, to diminish the heat and reduce the pulse. Lond. M. T. and Gaz., 1862, ii. p. 40.

Scrophularia nodosa Linn. Dr. J. Seiler has written a pamphlet on the treatment of consumption, by expansion of the chest and administration of scrophularia. Lond. M. T. and Gaz., 1863, i. 223.

SOLANACEÆ.

Solanum Lycopersicum Willd. The juice of the tomato, according to J. B. Enz, contains no citric, but tartaric and malic acids, and probably acetic acid. Viertelj. Ph. xi. Am. J. Ph. xxxiv. 515.

Datura Stramonium Linn. F. F. Mayer describes the volumetric assay of the preparations of stramonium and belladonna by the method proposed at your last meeting. Am. J. Ph. xxxv. 21. Ch. N. 174. Rép. Ph. xix. 451. Zeits. An. Ch. ii. 1863.

Pelikan, on the occasion of a medico legal examination of a case of supposed poisoning by stramonium, has compared the action of atropia on the pupil with that of hyoscyamus, and with strychnia, nicotina, woorara, etc. Enlargement of the pupil takes place with the first named, in from 15 to 30 minutes and continues for at least 24 hours; hyoscyamus produces it only after 2 hours, and the duration is much shorter; strychnia and the others named produce enlargement by internal application, but not when applied to the eye. Ph. Zeits. Russl., 1862. Viertelj. Ph. xii. 246.

Several cases of poisoning by stramonium seeds, are mentioned in Ph. J. Trans. (2) iv. 158.

Atropa belladonna Linn. Hirtz in the above mentioned paper, states that the therapeutical effect of extract from belladonna root is 5 times that of extract from the seeds.

On adding ammonia in excess to the acid syrup left by evaporating a tincture of belladonna root (in 90 p. c. alcohol), it assumes a darker color, and leaves on the filter a black substance, which may be redissolved in acid and again precipitated by ammonia, washed with water and then with alcohol; this substance F. Huebschman calls *atrosin*. The solution in dilute acids has a color from pink to red. Schweiz. Woch. Ph. N. Jahrb. Ph. xix. 369.

Solanum tuberosum Willd. Ludwig has found in the potato asparagin and malic acid, and indications of a glucoside. Arch. Ph. clvii. p. 18.

Nicotiana tabacum Linn., according to Schwarzenbach, contains no nitre up to the time of flowering. Viertelj. Ph. 33.

GENTIANACEÆ.

Gentiana lutea Linn. Ludwig and Kromayer have succeeded in extracting from the fresh root the crystallisable bitter principle, *gentiopicrin* ($C_{40}H_{30}O_{24}$) which is a copulate of sugar and *gentiogenin*. Ch. C. B. 1863. No. 4. Am. D. Circ. vii. 91. Am. J. Ph. xxxv.

Erythræa centaurium Pers. Méhu has endeavored to procure the bitter principle; what he obtained was still in an impure condition, though stated to be crystallisable from ether. The distilled water contained valerianic acid. J. de Ph. xlii. p. 38. Rép. Ph. xix. 289.

APOCYNACEÆ.

Strychnos Tieuté Lesch. A case of poisoning with upas tieuté happened in Berlin, from about 3 grains, which were found equal to 1¾ grains of strychnia. Opium appears to have cured the case. Ph. J. Trans. (2) iv. 181.

Vahea Senegalensis furnishes the West African cauotchouc. Wagner's Entdeckungsreisen. N. Jahrb. Ph. xix. 373.

Alstonia constricta F. Mueller. The yellowish, bitter bark has a slight odor of camphor; it was described by C. Palm in *Fragmenta phytographiæ Australiæ,* 1858, and has now been examined anatomically by L. Kny, and chemically by C. Palm. It contains an indifferent resinous bitter principle, and an essential, camphoric oil. Viertelj. Ph. xii. 161.

ASCLEPIADACEÆ.

Calotrophis gigantea Brown (Madar plant.) An extract from Major Drury's book, "On the useful plants of India," describing the preparation of the coma from the seeds, and of the bast for textile fibre; that from the latter resembles flax, and is much stronger than cotton. It is common in the Southern Peninsula, while

C. Hamiltonii abounds in the Northern portion and Bellary district, but yields the same kinds of fibre. Ch. N. 167.

OLEACEÆ.

Olea Europœa Linn. De Luca has continued his researches on the formation of the fatty matter of the fruit; the leaves contain mannite, likewise the flowers until they fall, the unripe fruit in the first stage of its growth, and all other parts of the plant, while there is none in the matured fruit. The chlorophyll remains and disappears with the mannite of the leaves. He supposes that the saccharide is present in the form of mannitan. J. de Ph. xlii. 493, 496, Rép. Ph. xix. 182.

Syringa vulgaris Linn. According to A. Kromayer, the bark in the early spring contains *syringin,* $C_{28} H_{28} O_{50}$ (+2HO), a copulate of *syringenin* ($C_{21} H_{18} O_{10}$) and fermentable sugar; somewhat later they also contain *syringo-picrin,* identical with Miellet's lilacin; the leaves contain syringo-picrin and mannite. Compare Arch. Ph. clix. 18. Am. D. Circ. iv. 106. Arch. Ph. clix. 216.

Ligustrum vulgare Linn. The ligustrin of Polex is proved by Kromayer to be identical with syringin. Arch. Ph. clxiii. 19.

CONIFERÆ.

Pinus. Trousseau has employed oil of turpentine with great benefit in intermittent neuralgia, the dose rising to 140 drops a day without disturbing the digestive function. Gaz. Méd. 1862, p. 7. N. Rep. xi. 76.

Pinus sylvestris Linn. The oil of the fine leaves prepared for fir-wool, is now used in gout and rheumatism. Ph. J. Trans. (2) iv. 376, 424. [It is a very good solvent for caoutchouc].

Pinus abies. See. Org. Chem. *Acids.*

P. pumilio Hænke. From the young branches and leaves, Mack (of Reichenhall) prepares an aromatic oil (Ol. P. pumilionis), which is not to be mistaken for the Ol. templinum, obtained from *Abies pectinata* DeC. Ann. Ch. Pharm. cxvi. 323. Arch. Ph. clxii. 270.

TAXACEÆ.

Taxus baccata Linn. In Bonplandia (1861, p. 266. Viertelj. Ph. xi. 566), a case is given which leaves no doubt as to the poisonous nature of the leaves.

Ephedra equisetina Bunge. A. Pollak has examined this plant, which is in use among the Kirgis as an antisyphilitic. He failed to find any substance to which the therapeutical effect could be ascribed. Viertelj. Ph. xii. 215. [In the extract prepared with 93 p. c. alcohol, after precipitation with subacetate of lead, P. states that he found *gum* (?) and sugar, the latter supposed to be present on account of a reaction with Fehling's test.]

ZINGIBERACEÆ.

Elettaria Cardamomum Maton. The cultivation and collection of cardamoms in India, district of Wynaad, is described in Ch. N. Am. J. Ph. xxxiv. 133.

Curcuma longa Linn. H. Ludwig has obtained resins of a red color, by precipitating a tincture of turmeric with a mixture of borax and hydrochloric acid; they turn darker with ammonia and become deep red with acid. He thinks that this deepening of the color, is owing to combination of the acids with constitutional water. Arch. Ph. clvi. 169.

IRIDACEÆ.

Crocus sativus. Fabre-Volpelière has examined an adulterated saffron, which he found to be a mixture of true saffron, Lima wood, and turmeric. J. de Méd. Brux. Viertelj. Ph. xi. 372.

Chappelier gives some remarks and reasons for the deterioration or degeneration of French saffron. Rép. Ph. xix. 84. Am. D. Circ. vii.

VANILLACEÆ.

Vanilla aromatica S. An account of the cultivation of vanilla at Isle Réunion is given in Rép. Ph. Am. J. Ph. xxxv. 396.

PALMACEÆ.

Areca Catechu Linn. Ground betel-nut, according to Dr. E. Morris, in doses of from 4 to 6 drachms in milk, is an excellent remedy in tænia.

MELANTHACEÆ.

Veratrum viride Ait. A very serious, but not fatal, case of poisoning from the tincture, happened to a chemist while experimenting with it. M. T. and Gaz. 1863. i. 5. Ph. J. Trans. (2) iv. 379.

LILIACEÆ.

Aloe Socotrina Linn. Socotrine aloes distilled with dil. soda lye, according to Czumpelick, yields an essential oil and a small quantity of a volatile base. The alkaline residue contains crystallisable substances and resins; the aloine of Smith, of Edinburgh, could not be found. J. prakt. Ch. lxxxiv. 436. Am. D. Circ. vi. 181.

Fritillaria imperialis. The liquid secreted by the flowers, is without color or odor, and contains glucose and non-crystallisable sugar. Calloud in Rép. Ph. xviii. Am. D. Circ. vi. 167. Am. J. Ph. xxxiv.

Narthecium ossifragum Huds., is described and has been analysed by Walz. Compare N. Jahrb. Ph. xiv. 345. Viertelj. Ph. xi. Cannst. Jahrb. for 1861, p. 17. Am. D. Circ. vi. 181.

Aloe Zanzibar is mentioned by Finckh (N. Jahrb. Ph. xviii. 25), as a soft and very inferior kind, yielding hardly 12 p. c. of aqueous extract.

ARACEÆ.

Arum Dracunculus Linn. The fresh root, Landerer states, is used in Greece as an external application in rheumatism. Arch. Ph. clxiii. 124.

GRAMINACEÆ.

Triticum repens Linn. Dr. Hays reports a case of irritable condition of the bladder, which was considerably relieved by a sweetened infusion of the stalk (Rad. Graminis). Am. J. Med. Sc., July 1862, p. 279. Am. D. Circ. vi. 138.

Zea Mays Linn. According to Landererer the silky stigmata are used in Greece as decoction in diseases of the bladder. Am. D. Circ. vi. 55.

FILICES.

Aspidium filix mas S. The resinous fluid extract, according to Drs. A. Fleming (Brit. M. J. 1861, p. 529), and Ogle (Ib. 1863, p. 266), is the best remedy for tapeworm. Pavesi has prepared from the root stock of male fern an acrid bitter principle, insoluble in acids, soluble in alcohol and ether, which he calls aspidin, and to which he ascribes anthelmintic properties. Viertelj. Ph. x. 604. Am. D. Circ. vii.

LYCOPODIACEÆ.

Lycopodium clavatum Linn. G. Janssen has examined commercial lycopodium, which contained over 22 p. c. of mineral substances, viz., a mixture of talc, gypsum, barytes, and chalk. J. de Med. Brux. 1862, p. 174. Viertelj. Ph. xi. 405.

Erdmann likewise has met with some, containing from 10 to 15 p. c. of gypsum. Arch. Ph. clv. 392.

HEPATICÆ.

Hepatica. S. O. Lindberg calls attention to the essential oils contained in various species, as *jungermannia*, *madotheca*, etc. He has distilled the oil from M. lævigata; the yield is small, the oil denser than water, and boils above 100° C. N. Rep. xii. p. 1.

LICHENES.

Contributions to the chemistry of the lichens have been published by O. Hesse. (Ann. Ch. Pharm. cxvii. 297. Ch. C. B. 1861, p. 513; Ann. Ch. Pharm. cxix. p. 365) by H. Gaultier de Claubry (Compt. lii. 1252. liii. 22. Polyt. J. clxii. 453), and by Stenhouse (Ann. Ch. Pharm. cxxv.)

FUNGI.

Agaricus muscarius Linn. has been examined by J. A. Kaiser; he has not succeeded in eliminating any proximate principle, to which the poisonous action might be ascribed. N. Rep. xii 27.

A. bulbosus Solv. To the cases of poisoning from mushrooms must be added one by the above, described by Lafargue in Rép. Ph. xix. 241.

Spermœdia clavus Fries, according to Barrlay, whose general results agree with those of Bonorden, is not a fungus proper but a metamorphosed ovary, into which shortly before fertilisation the sporules of *Trichobasis antherarum* and *T. foliorum* find entrance together with the fovillæ. Arch. Ph. clvi. p. 31. Cannst. Jahrb. pr. 1861. p. 8.

Gonnermann has followed with the microscope the different stages of ergot of rye from *Cordiceps purpurea* Fries to *Claviceps purpurea* Tulasne. See the paper and illustrations in Arch. Ph. clxiv. 106.

Paullsen calls attention to some alleged variations in the quality of ergot and its mode of collection. Arch. clvi. p. 302.

Another theory for the formation of spurred rye is given by

Schlenzig, who ascribes it to the sting of a small, brownish insect, *Rhagonycha melanura.* N. Rep. xi. 223.

Leperdriel states that the ergot of wheat does not change by keeping, is much more efficacious than that of rye, and contains less of the poisonous principle. Ph. J. Trans. (2) iv. 423.

H. Ludwig gives the chemical history of ergot, and the results of a partial analysis by W. Fiedler. It contains between 27 and 28 p. c. of a thick, yellowish, saponifiable oil, containing oleïn. Hot alcohol of 85 p. c. yields 12½ p. c. of extract, which deposites crystals of mycose. Ludwig concludes that the volatile base evolved by distillation with alkalies is neither propylamina nor trimethylamina, but *methylamina.* Arch. Ph. clxiv. 193.

ALGACEÆ.

Cladophora glomerata according to Ch. Petler leaves over 23 p. c. of ashes, which contain traces of iodine. Viertelj. Ph. xi. 545.

Sphærococcus lichenoides Ag., as is shown by Gonnermann and Ludwig, contains true starch, which, however, differs from the starch of higher plants in not being blued by iodine water, after soaking in pure water. Arch. Ph. clxi. 204.

Fucus vesiculosus Linn. is greatly lauded in the French papers as a remedy for obesity. Ph. J. Trans. (1) iv. 131. Compare *Pharmacy.*

Kelp. E. C. C. Stanford has published extensive researches on its production, and introduces a new system for its preparation more productive, and combined with less expense. Ph. J. Trans. (2) iii. p.

ANIMAL DRUGS.

MAMMALIA.

Moschus Sibiricus Pallas. A new musk has made its appearance in the European markets, which O. Berg refers to the above species as the most probable source. Arch. Ph. clxiv. 242.

Bos taurus Linn. Al. Mueller and Eisenstuck find that when milk is shaken with seven times its bulk of a mixture of 3 vols. absol. ether, and 1 of absol. alcohol, all fatty matter will pass into solution within twenty-four hours. J. prakt. Ch. lxxxvi. 380.

For some remarks on the examination of milk by Fh. Gerdnig compare Am. D. Circ vi. 166.

Wittstein has published extensive researches on the densities of milk, ascertained for the purpose of founding thereon a method for examining milk as to its quality, but could arrive at no satisfactory results. Viertelj. Ph. xii.

A. Vogel gives a new method for estimating the quality of milk. It is founded on the opacity of milk and its comparative transparency to the light of a candle; the latter when seen through a cylindrical vessel filled with a stratum of water remains visible until a certain quantity of milk is added, this quantity being in inverse proportion to the quality of the milk. Zeits. An. Ch. ii. 103. This is the same principle as that employed in Donnè's *galactoscope.*

H. Hager passes in review the principal properties of milk and all galactoscopes proposed for testing it. Ph. C. H. 1863, Nos. 13, 14.

Sus scrofa Linn. For a report on the preparation of lard for medicinal purposes compare the report to the Sociètè de Pharmacie mentioned sub. *Pharmacy,* and a paper on the same subject by W. Procter in Am. J. Ph. xxxv. 114.

PISCES.

Gadus morrhua Linn. Dr. A. Wallace recommends the oil to be administered in emulsion with limewater, with or without the addition of a small quantity of permanganate. Lond. T. & Gaz. April 19, 1862. Am. J. Med. Sc. July 1862, p. 214.

A writer in Ph. Central Halle expresses a view that the principally active portion of cod liver oil consists in free fatty acids. Am. D. Circ. vi. 154.

Gadus lota Linn. (Angl. *eel-pout;* Germ. *aal-quappe;* French, *lotte.*) The oil of the liver of this fish is sometimes still prescribed under the name of *Oleum hepatis mustelæ fluviatilis* as an ophthalmic embrocation. J. de Ph. xlii. 20 Am. D. Circ. vii.

Clupea harengus Linn. Girardin and Marchand have examined herring's brine, which in 1000 parts contained 318 of solid ingredients, among which was 3½ p. c. of phosphate of trimethylamina and 10¾ p. c. of the lactate. Arch. Ph. clxiii. 132.

REPTILIA.

J. M. Maisch describes the various remedies in use on this continent for snake-bites. N. Rep. xi. 352.

INSECTA.

Blatta Americana. A. Vinson describes a peculiar affection of the lips, (herpes battæ) caused by this insect crawling over the lips of the inhabitants on Isle Bourbon. Gaz. Mèd. 1863, No. 9. N. Rep. xii. 83.

ARACHNIDA.

Scorpio Gabonensis Lucas. A. Vinson communicates notes on the sting of this scorpion in the Isle Bourbon. Gaz. Mèd. 1863, No. 9. N. Rep. xii. 86.

ELEMENTARY AND INORGANIC SUBSTANCES.

Ozonium. Observations on the physiological and pathological action of ozone, are communicated by Pfaff. Henke's Zeits. f. Staatsh. 1862, po. 2. Lond. M. T. and Gaz. 1862, ii. p. 335.

Oxygenium. Experiments on the action of oxygen on animal and vegetable substances after death, are communicated by Pasteur. Compt. lvi. 734. Ch. N. 184.

Aquæ minerales. A description of the *Aquæ Apollinares,* Vicarello Springs in the Campagna, is given in Lond. M. T. and Gaz. 1862. ii. p. 387.

St. Moritz (Switzerland) and its springs are described in Lond. M. T. and Gaz. 1862, ii. p. 447.

Flechsig has found baryta in the Zwickau, Kreuznach, Pyrmont, Ems, and Karlsbad springs and several others. Arch. Ph. clxiii. 138.

E. Stieren has examined some saltwaters from both sides of the Alleghany and Kes-Keminetas rivers, some distance above Pittsburgh, Pa., which contain an unusually large proportion of bromine and iodine in combination. Am. J. Sc. xxxiv. 47.

Hydrogenii binoxydum. Aqua oxygenata. Duprey states that carbonic acid passed through a solution of binoxyd of barium, yields pure binoxyd of hydrogen in solution. Compt. lv. p 736. Ch. C. B. 1864, p. 191. [Is it free from bicarbonate of baryta?]

It has been used by Dr. Richardson in a large variety of affections, in the form of Thénard's solution. Its action he considers as somewhat analogous to that of the mercurials. Lancet, April 12, 1862. Am. J. Med. Sc. July 1862, p. 210.

Acidum nitricum dil. is recommended by Dr. Noble in small doses for whooping cough. Am. J. Med. Sc. April, 1862. Am. D. Circ. vi. 138.

Acidum carbonicum, diluted with atmospheric air, is recommended as a safe and rapid anæsthetic, by Ozanam. Lond. M. T. and Gaz. 118.

Acidum phosphoricum. Notes on its therapeutical action, by J. C. Peters, are copied from Am. Med. Monthly in Am. D. Circ. vi. 170.

Sulphur. T. L. Phipson states that he has examined sulphur from Naples, which contained 11 p. c. of arsenic, and ¼ p. c. of selenium. Ch. N.—Am. J. Ph. xxxiv. 443.

Brominium has come largely into use in the U. S. Army hospitals as a disinfectant. Compare Am. J. Med. Sc. Am. D. Circ. vii. Am. J. Ph. xxxv.

Sulphites. Polli calls attention to the use of alkaline sulphites and hyposulphites as internal antiseptics. Lond. M. T. and Gaz., June 14, 1862. Am. J. Med. Sc. Oct., 1862, p. 513. Am. J. Ph. xxxiv. 446.

Acidum Hydrochloricum. Dr. Henderson, Shanghai, uses it (1 drach in Inf. Quassiæ 3^a hora), in typhoid. Lond. M. T. and Gaz. 1863, i. p. 307.

Antimonium. According to L. W. Bailey, a deposite of sulphuret of antimony of great richness occurs in Prince William parish, 20 miles above Fredericton, on S. W. side of St. John River, New Brunswick. Am. J. Sc. xxxv. 150.

Potassæ bichromas. J. Tingley recommends this salt as a remedy for lead poisoning. Am. D. Circ. vi. 169. [The antidote appears as dangerous, if not more so, than the poison].

A fatal case of poisoning with bichromate happened in Charkow, Russia. This occasioned a discussion on remedies for this poison, Robinson having proposed, and Pelikan rejected, acetate of lead. Frederking suggests tartaric acid alone or mixed with sugar. Ph. Zeits. Russl. 1862, i. No. 6 and 7. Viertelj. Ph. xii. 289. Am. D. Circ. vii.

Potassæ chloras. Dr. Drysdale narrates a cure of infantile syphilis treated with this salt only. Lond. M. T. and Gaz. 1862, ii. 555·

Potassæ nitras. A. Sawyer (Bost. M. S. Journal. Am. D Circ. vi. 170,) considers nitre in 10 grain doses superior to quinia in ague.

Calx chlorinata, as stated by Dr. Glaser, is one of the best insecticides. Polyt. J. clxiv. p. 397. A case of poisoning by bleaching powder is recorded in Ph. J. Trans. (2) iii. 628.

Boro-natro-calcite. Ch. Kraut shows that hydroboracite, Hayesin, tiza, borocalcite, borax lime, etc., are identical in their composition. Arch. Ph. clxii. 25.

Zincum. T. L. Phipson states that he fouud native zinc in basalt from Brunswick, near Melbourne, Victoria. Ch. N. 138.

Dr. Greenhow describes certain affections of persons exposed to the fumes of zinc. Ch. N. 149. Am. D. Circ.

Zinci chloridum. A fatal case of poisoning by Burnett's fluid occurred in England. [Lond. M. T. and Gaz. 1862, ii. p. 404. White of egg seemed to be without effect; it does not appear why a carbonated alkali was not administered in the case, the nature of the poison being known.]

Stanni oxychloridum, *Stanni phosphas* and *Stanni tannas* are proposed by Calvo in place of the preparations of bismuth. J. de Ph. xlii. p. 335. Am. D. Circ. vii. 41.

Ferrum. A summary of Pakrowsky's researches on the therapeutical action of preparations from this metal, is copied from Virchow's Arch. xxii. in Am. D. Circ. vi. 154.

Ferri oxydum hydratum. A. Vée gives some remarks on this preparation as an antidote for arsenic. Rép. Chim. p. appl. Nov. 1862. Rép. Ph. xix. 339.

Ferri Sesquichloridum. Baudon recommends it diluted with glycerine as a local application in herpes zoster. Bull. Thérap. Juilliet 1862, p. 76. M. T. and Gaz. 1862, ii. 235.

Dr. Jones has published a pamphlet (London, J. Churchill,) on the treatment of phthisis by ferric chloride, which is highly spoken of. M. T. and Gaz. 1862, ii. 40. Am. D. Circ. vi. 122. Dr. Cotton (Ib. Am. D. Circ. vii. 39,) likewise considers this salt a most valuable remedy.

Manganii binoxydum. E. Stieren has examined manganese from Lake Superior, which contained about 53 p. c. of binoxyd and 38 1-5th p. c. of silica. Viertelj. Ph. xi. 338.

Sodii chloridum. The same has analyzed salt from Saltville, Washington Co., Virginia; it consists of $90\frac{1}{2}$ p. c. of salt, 9 p. c. of clay, marl, and lime, and $\frac{1}{2}$ p. c. of gypsum. Viertelj. Ph. xi. 334. The mother liquor from the Onondago Salt Springs, Syracuse, N. Y., has 5·85 p. c. of Na. Cl. 0·19 of KCl. 11·1 of CalCl, 16·94 of MgCl, 0·6 of Mg. Br. 0·04 of CaI. 0.01 of $Ko\,So_3$. 0·01 of $NaO\,So_3$. Viertelj. Ph. xi. 341.

Calcis carbonas. Jassoy advocates the use of the precipitated carbonate of lime in place of other chalks, such as creta or testa praep. N. Jahrb. Ph. xix. 354.

Calcis et ferri phosphas. Thisy recommends a "subphosphate of iron and lime" in place of subnitrate of bismuth. Bull. Thérap. J. de. Ph. xlii. 337.

Bismuthi Subnitras. Quesneville proposes cream as vehicle for its administration. Am. D. Circ. vi. 123.

Hydrargyrum. On the absorption of mercury compare *Ung. Hydrarg.* Sub. *Pharmacy.*

Antimonii iodidum, and

Antimonii Oxy-iodidum. Van den Corput prepares them analogous to the chloride and oxy-chloride, and uses the first as an external revulsive, it being equal to tartar-emetic as such, while the other, administered in doses of from $\frac{3}{4}$ to 4 grains, acts similarly to Kermes mineral. Br. F. Med. and S. Rev., July, 1862. Am. J. Med. Sc., Oct., 1862, 512. N. Rep. xi. 92. J. de Ph. xli. p. 527.

ORGANIC SUBSTANCES AND CHEMICALS.

Acidum hydrocyanicum is recommended by Dr. K. McLeod in cases of noisy insanity; 4 mm. Ac. hydrocy. dil. in Mist. Camph. ½ ounce, half hourly. Lond. M. T. and Gaz., 1862, i. p. 290.

Oleum Pini sylvestris. See *Coniferæ.*

Resina Pini is recommended for pertussis by a writer in Austral. Med. Rec. Lond. M. T. and Gaz., 1863, i. 123. Am. D. Circ. vii. 55.

Chloroformum. Several deaths by inhalation of chloroform are reported, apparently connected with fatty degeneration of the heart. Ph. J. Trans. (2) iv. 138.

Nitrobenzoleum. A death from 15 drops of this substance occurred in the Isle-of-Man. Ammonia appeared to give a little relief, [ferrous sulphate would suggest itself as the proper remedy]. Compare Ph. J. Trans. (2) iv.

Glycerina. According to C. Palm, when glycerin contains cane-sugar syrup, it will blacken on being evaporated with a few drops of dil. sulphuric acid in the water-bath; if grape sugar be present, it will turn brown on being boiled with ⅓ of its bulk of caustic potassa lye; besides both sugars are precipitated by chloroform, while glycerin mixes with it. Vierteljj. xi. 554.

Acidum picricum. The examination and purification of commercial carbazotic acid is described in Ph. C. H. 1863. No. 8 Am. D. Circ. vii. 71.

Balard describes the mode of manufacture employed by Perra at Petit Vauves (Seine). Am. D. Circ. vi. 167.

Ferri picras. H. N. Draper describes the preparation of this salt and its use as a tonic and antiperiodic. Dubl. Med. Press, Dec. 3, 1862. Am. D. Circ. vii. 26. Am. J. Ph. xxxv. 169.

Acidum aceticum. Fournié uses the vapor of acetic acid and chloroform as a local anæsthetic, and calls the manipulation *chloracetisation.* Gaz. Med. 1861. No. 51. N. Rep. xi. 34.

Ammoniæ valerianas. Several cases of neuralgia treated with this salt are quoted in the Lancet by Dr. O'Connor. Am. D. Circ. vi. 123.

Magnesiæ citras. Setler's process for solid citrate of magnesia is described in J. de Ph. xliii. 383. Rép. Ph. xix. 145. Am. J. Ph. xxvv. 312. A. D. Circ. vii. 109.

Zinci valerianas was used with advantage in a case of hysterical motions of the extremities, in doses of 3 grains three times a day. Am. D. Circ. vi. 123.

Ferri et Zinci citras. H. N. Draper prepares it by adding to a solution of 4 ounces of citrate of iron in 10 ounces of water the solution of one ounce of citrate of zinc (prepared from carbonate) in Aq. Ammoniæ, and reducing to scales: dose from 2 to 5 grains. Dubl. Med. Press, Dec. 31, 1862. Am. J. Med. Sc. April, 1863, p. 466.

Lactates. According to Petrequin the soda and magnesia salts are useful in dyspepsia complicated with anorexia. Gaz. Hebd. 26. Lond. M. T. and Gaz. 1862, ii. p. 235. Formulas for their administration are given in Am. D. Circ. vii. 90.

Ferri lactas. Gerves recommends that in its preparation the whey, sugar, and iron be digested at a temperature of between 75 and 90° F., as otherwise much acetate of iron would form. After crystallization, the mother liquor is to be mixed with sulphite of soda and iron filings, and then yields another crop of pure lactate of iron. Arch. Ph. clxiii. 103. N. Jahrb. Ph. xix. 368.

Ferri et potassæ tartras, as reported by Dr. Wilshire, has been used with success in a long standing case of rheumatism. Am. D. Circ. vi. 123.

Sodæ sylvino-abietinas, is a resin soap, used in blennorrhœa. Zeits. Œst. Ap. V. N. Jahrb. Ph. xv. Am. D. Circ. vii. 57.

Trimethylamina (propylamina). Dr. Levick has used it very successfully in acute rheumatism. Am. D. Circ. vi. 156.

Anilinæ sulphas has failed in 5 cases of chorea under the treatment of Dr. MacKenzie (Lond. M. T. and Gaz. March 8, 1862), and one of Th. Skinner (Ib. March 15, 1862). Am. J. Med. Sc. July, 1862, 135.

Nicotina. S. Haughton communicates about some cases of tetanus, among which one of spasm produced by strychnia, which were successfully treated with nicotina in a slightly dilute form (2-3ds nicotina, one-half to 2½ drops per dose). Dubl. Quart. J. Aug. 1862. Am. J. Med. Sc. January, 1863. p. 220. April, 1863, p. 496.

Morphia. A case of poisoning with morphia was treated by Anstie with caffëina, but proved fatal. Lond. M. T. and Gaz. 1863, i. p. 134.

According to A. Valser, for the solution of morphia in Stas' process the ordinary ether should be replaced by pure acetic ether, which is a good solvent of this alkaloid. J. de Ph. xliii. p. 49.

Codeïna. Aran considers it a sedative of superior value. Ed. M. J. Sept., 1862. Am. D. Circ. vii. 27.

Narcotina (anarcotina) in the practice of Dr. Gardner (Ghazepore) has only failed in 3 p. c. of his cases of intermittent fever, on an average dose of 22·7 grains of the alkaloid during the paroxysm, and 16.3 grains during convalescence. Lond. M. T. and Gaz. 1862, ii. p. 203.

Quinia. Anstie communicates a cure of epilepsy by quinia alone. Lond. M. T. and Gaz. 1862, ii. p. 108.

Chasseau and J. McCraith, of Smyrna, state that small doses (1 or 2 grains of the sulphate) in form of subcutaneous injections (in the arm) are equivalent to the large doses usually administered internally in intermittents. Lond. M. T. and Gas. 1862, ii. p. 120, 367.

Dr. Cotton states that quinia is inferior to other tonics in the treatment of phthisis, unless combined with iron. Lond. T. and Gaz., 1862, ii. 220. Am. D. Circ.

As a prophylactic quinia was tried extensively and with great success on board the British men-of-war in Canton river, as reported by Dr. Smart. Am. J. Med. Sc., July, 1862, p. 221.

Cinchonia. J. Ince wishes to see the sulphate or hydrochlorate more extensively employed in place of quinia. Ph. J. Trans. (2) iv. Am. D. Circ. vii. 52. W. F. Daniell considers that the use of cinchonia has proved a failure at least in W. Africa, (Ph. J. Trans. (2) iv. A. D. Circ. vii. 107) while J. E. Howard states that it has certainly been used with success in the East Indies. Ph. J. Trans. (2) iv. Am. D. Circ. vii. 122.

Veratria. Bouchut advocates its use in the treatment of rheumatic fever in children. Am. J. Med. Sc., Oct., 1862, p. 536.

Ferri Strychniæque Citras. H. N. Draper's formula for this preparation is 980 grains of citrate of iron, and 10 each of strychnia and citric acid. To be treated as in preparing citrate of iron and quinia. Dose from 2 to 6 grains. Strychnia 1 to 100. Dubl. M. Rep., 1862. Am. J. Med. Sc., April, 1863, p. 466.

Ferri et Quiniæ Strychniæque Citras. Prepared as the above, using citrate of iron and quinia in place of citrate of iron alone. Dose from 2 to 5 grains. *Ib.*

Caffeïnæ Arsenis and tanno-arsenic acid are two antiperiodics, employed by Schnepf in Alexandria, (Egypt). Compare Brit. F. M. Ph. Rev., January, 1863. Am. J. Ph. xxxv. p. 337.

Phlorrhizin is again brought into notice as an antiperiodic. Dubl. Quart. J., Aug., 1862. Am. J. Med. Sc., January, 1863, p. 188.

Anilina. When a small quantity of sulphate of anilina on a platinum foil attached to the positive pole of a battery comes in contact with the negative pole, as Letheby has found, a blue color is produced; the product of the action is a greenish blue powder, which turns blue with ammonia, but does not dissolve nor is it soluble in ordinary menstrua. Strychnia produces a similar reaction, but only in the presence of strong sulphuric acid, and is not volatilised by the action of alkalies. J. Ch. Soc. xv. p. 161. Ph. J. Trans. (2) iv. p. 128.

Quinia and *Cinchona-bases*, their testing, etc., and that of *Morphia* will be found under *Mat. Med.*

Strychnia. The test with nitroprusside of sodium, proposed by Horsley, has been proved to have no foundation in fact, by J. E. D. Rodgers. Ch. N. p. 135.

Veratria in its reaction with sulphuric acid, is distinguished from salicin, according to Thomson, by the disappearance of the color in some hours, when that of salicin still remains. Ph. J. Trans. (2) ii. p. 548.

Trapp has found that while veratria dissolves in cold hydrochloric acid without coloration, it turns to that of permanganate solution on heating, and does then not change its color for weeks. From Ph. Zeits. Russl. in N. Rep. xi. p. 556.

Berberina, v. Chemistry.

INORGANIC CHEMISTRY.

OXYGEN.

Ordinary Oxygen. De Luca (Compt. liii. p. 156) applies the process of Deville and Debray, for laboratory purposes. He distils the sulphuric acid from a platinum retort containing pumice stone, and passes the mixture of gases through a red hot porcelain tube filled with the same substance.

Webster's process, patented in England, for the preparation of oxygen on a large scale, consists in calcining nitrate of soda with double its weight of oxyd of zinc (or of iron) in iron retorts; the gaseous product is a mixture of oxygen with from 25 to 41 per cent. of nitrogen. Ch. N. p. 152.

W. Heldt has published a pamphlet "On the fundamental properties of oxygen and hydrogen," of which a summary is given in Am. J. Sc. (2) xxxv. p. 112. [His views on the action of iodine on volatile oils are very peculiar.]

Ozone. C. F. Schœnbein has continued his researches on the various allotropic modifications of oxygen, and describes a process for the preparation of ozone, as well as the distinctive reactions of this substance. The process consists in adding binoxyd of barium to a solution of the green solution of permanganate in sulphuric acid (sp gr. 1·85). J. prakt. Ch. lxxxvi. N. Rep. xv. p. 362. J. de Ph. xlii. p. 269. Am. J. Sc. (2) xxxv. p. 111. [It will be remembered that Bœttger has used the permanganate and sulphuric acid for the same purpose (Proc. for 1862), and that Hougean has prepared ozone from binoxyd of barium and sulphuric acid. (J. de Ph. xxxvii.)]

Gorup-Besanez gives further researches on the action of ozone upon organic substances, this time in the presence of alkalies; it varies considerably in degree, and resembles in its effect a process of putrefaction. He calls attention to the fact that substances which reappear unchanged in the urine, are also but little affected by ozone without the presence of free alkali; such are malic, tartaric, citric, oxalic, and hippuric acids, leucin, urea, glucose, cane sugar, and mannite, while alkaline liquors within and outside the organism, produce the results of combustion or putrefaction. Ann. Ch. Pharm. cxxv. p. 207.

HYDROGEN.

Water. That the ice which forms in impure water is quite or nearly free from impurities, is again noticed by Robinet. J. de Ph. xli. p. 485. Am. D. Circ. vii. p. 11. [The use of melted ice for pharmaceutical purposes has before been recommended by the present writer; it was Faraday who first drew attention to this phenomenon in freezing aqueous liquids.]

The violent ebullition caused by throwing powders, like iron filings into slowly boiling water, is also produced by snow or powderered ice. P. A. Chadbourne in Am. J. Sc. (2) xxxiv. p. 130. [Any cold substance, whether solid or liquid, will produce this; it is a frequent cause of loss in incautiously evaporating pharmaceutical preparations.]

Interesting researches on the dissociation or splitting of water, by St. Claire Deville, are communicated in J. de Ph. xlii. 177. Ann. Ch. Pharm. cxxvi. 184.

Hager states that distilled water of excellent quality is obtained, when the ordinary water previous to distillation is mixed with 1–10th per cent. of his moist ferric sulphate, and afterwards with a little milk of lime, the sediment to be removed by decantation. Ph. C. H. ii. 396.

De Luca has made some researches on organic and mineral constituents of rain-water collected at different elevations; that from not far above the earth's surface contains noticeable traces of phosphoric acid and iodine. J. de Ph. xli. 359.

Armand Gautier has published a comprehensive treatise on potable waters. Notice in J. de Ph. xlii. 159.

Bynoxyd of hydrogen. C. Brodie has studied the action of binoxyd of hydrogen on certain oxyds, which he believes may be reduced to constant chemical formulas; nor is there any difference between the oxygen of the various metallic peroxyds. J. Ch. Soc. xiv. Rép. Ph. xix. 136.

Compare also *sub Mat. Medica.*

NITROGEN.

Prof. Bœttger observed that, when hydrogen, or carbohydrides, or organic substances capable of evolving the same, are burnt in the air, one of the products of the combustion is always nitrite of ammonia. J. prakt. Ch. lxxxv. 396.

Schœnbein made the same observations, and likewise that the mere evaporation of water in ordinary air involves the formation of the same compound, whether the vaporisation takes place at a higher or at the ordinary temperature, from alkaline solutions or from the surface of inert substances. The production of an oxydising substance in the combustion of carbohydrides and fatty bodies had before been noticed by him in 1845, while Th. de Saussure had noticed in the combustion of hydrogen the formation of both ammonia, and what he believed to be nitric acid. Ann. Ch. Ph. cxxiv. 1. A. D. Circ. vii. 6. Ch. N. 153. N. Rep. xi. 212.

The reactions given by Schœnbein and Goppelsrœder in a previous publication for the detection of nitrous acid, (Ann Ch. Ph. cxi 125. A. D. Circ. vi. 102) especially those with zinc and with a solution of copper appear of very doubtful value. While E. Bohlig (Ann Ch. Pharm. cxxv. 21) calls in question Schœnbein's theory for the presence of nitrous salts of ammonia in the products of combustion and refers the same to the pre-existence of ammonia in the air, J. v. Liebig (ib. p. 33) defends the views of Schœnbein and claims priority for the latter over Bœttger.

On the other hand T. Sterry Hunt (Compt. lv 460. Am. J. Sc. xxxv. 271) and G. S. Schæffer (Am. J. Sc. xxxv. 409) appear to have a still prior title at least to the theory of the phenomenon described by Schœnbein.

Nitrites. Researches on the composition, etc., of the salts of nitrous acid have been communicated by Lang, J. f. prakt. Ch. lxxxvi. 295, and by Hampe, Ann. Ch. Pharm., May, 1863.

Nitrous Oxyd. H. Schiff prepares this gas pure by acting on metallic zinc with a mixture of equal volumes of conc. nitric and sulphuric acids, and 9 to 10 volumes of water. Traces of nitric oxyd are removed by passing the gas through an U tube containing pumice stone saturated with protosulphate of iron. Ann. Ch. Pharm. cxviii. 84.

Nitric acid. Kuhlmann has founded a process for the manuture of this acid on the mutual action of nitrate of soda and chloride of manganium at a temperature of 230° C. The gaseous product is a mixture of nitrous acid and oxygen, which is passed into water and then forms nitric acid. Pharm. J. Trans. (2) iv. 155. Am. J. Ph. xxxv. 72. A. D. Circ. vii. 6.

H. Hager gives directions for the preparation of pure (red) fuming acid (from "Commentar zur Preuss. Pharm. Ed. vii.") 10 parts of dry coarsely powdered nitre is distilled on a sand bath from a dry tubulated retort with 9 parts of sulphuric acid, of sp. gr. 1·842 to be prepared by mixing 4 to 5 parts of oil of vitriol with 2 of Nordhausen acid. The first product containing chlorine is received separately, and after attaching the receiver, small pieces of charcoal are introduced through the tubulus. The yield is from 6 to 6·3 parts of fuming acid. Nitrate of soda can only be used when it is free from iodine, since otherwise the iodine passes into the distillate.

Nitric acid stains are removed from the hands, according to Schwarz, by a solution of sulphuret of ammonium. Ch. N. Am. D. Circ. vii. 27.

CARBON.

Pure carbon is obtained by G. Gore, from carbonate of soda by deflagration in a crucible with phosphorus, or by passing the vapor of the latter through a tube with anhydrous carbonate. Ch. N. 147. Am. J. Ph. xxxv. 45. A. D. Circ. vii. 6.

Millon has investigated the action of alkaline fluids on charcoal obtained from wood at a temperature of 320° C. Humus-like substances are formed, à great portion of the charcoal passing into solution. J. de Ph. xxxviii. Arch Ph. clxiii. 153.

R. A. Smith publishes experiments on the absorption of gases by charcoal and a table of the relative power of absorption of the coal obtained from various kinds of wood, for ammonia, carbonic acid and cyanogen. Among these the charcoal of logwood stands highest, that of beech and rosewood among the lowest. Proc. Roy. Soc. xii. 424. Ch. N. 181.

E. Kopp proposes to purify coke for finer metallurgic operations, by means of hydrochloric acid; the pure product is to be mixed with a minute quantity of carbonate of soda free from sulphate. Rép. Ch. p. et ap. Ch. N. 168.

Roscoe has examined the meteorite of Alais (France) which besides sulphur and graphite, contains a crystallisable carbohydride in small quantity. Ch. N. 171.

Carbonic acid. St. Claire Deville has published researches on the dissociation of carbonic acid. Compt. lvi. 729. Ch. N. 181.

Carbonates of ferric, chromic, etc., oxyds. As before noticed by Langlois, Wallace, Barratt, Meissner, and others, the precipitates from the solutions of these oxyds are carbonates. The late Theod. Parkman, has prepared and analysed those of ferric, chromic, aluminic, glycinic and uranic carbonate. They lose the carbonic acid [illegible]y readily. Am. J. Sc. (2) xxxiv. 321. Ch. N. 170, 171.

SILICON.

Silicium. H. Schiff places the (double) atomic weight of silicium at 28·01. Ann. Ch Pharm. cxx. 94.

Pure Silicic acid in solution up to 14 per cent. is readily obtained according to A. H. Church, by dialysis. This solution behaves somewhat different from that of silicates towards the solutions of alkaline earth-salts. J. Ch. Soc. xv. 107. Ch. C. B., 1863, p. 80.

Waterglass. A very thorough history of the soluble silicates, their preparation, and employment, is given by J. M. Ordway, in Am. J. Sc. xxxv. 185.

SULPHUR.

The modification of sulphur, which is soluble in bisulphide of carbon, is obtained according to Faucher by digesting for some hours on the water-bath any kind of sulphur with a solution of sulphite of soda insufficient to completely dissolve the sulphur. J. de Ph. xli. 207.

J. de Girard gives some experiments on the action of sulphur on solutions of salts with an alkaline reaction. When boiled with pyrophosphate of soda or with sulphide of sodium, hydrosulphuric acid is evolved while a hyposulphite remains in solution. Compt. lvi. 798. Ch. N. 184.

The action of sulphur and phosphorus and other elements of the same group on metallic solutions forms the subject of an inaugural dissertation by the late Th. Parkman. Am. J. Sc., May, 1862. Ch. N. 138, 140. There results generally a sulphide or a corresponding compound, especially in presence of sulphurous acid or other reducing agents. Sulphurous acid in the free state reduces the salts of cupric oxyd.

Ch. Ménière notices the occurrence of fused sulphur mixed with saline substances in the commercial sulphuret of potassium, and makes some remarks on the changes to which this preparation is liable. Rép. xix. 57.

Sulphuric acid. Laing and Cossins have patented (in England) processess for the production of the nitrous gas required in the manufacture of oil of vitriol. One of them consists in acting on alkaline nitrates with arsenious or (?) arsenic acid; the other proposes to bring about the same reduction by chromic iron ore, and the latter method likewise allows of the production of chromates. A. D. Circ. vii. 23.

Sulphurous acid, as has been observed by Geitner, when its aqueous solution is heated in a closed tube at 200° C., is decomposed into sulphur and sulphuric acid. In presence of a metal, a sulphuret is formed, but no sulphuric acid. Zeits. Ch. Ph. vi. 156.

PHOSPHORUS.

Comminution of phosphorus, as noticed by Bœttger, is facilitated when the same is shaken with urine. H. Schiff has proved that there is in this case a decomposition of urea, and probably of other constituents of the urine. Ann. Ch. Pharm. cxviii. 88. A. D. Circ. vi. 165.

Amorphous phosphorus is recommended by Personne in place of the ordinary, for the preparation of hydriodic acid, and the iodide and bromide of ethyle. Compt. lii. 468.

Phosphoric acid. Rieckher (N. Jahrb. Ph., Feb., 1863. A. D. Circ. vii. 109) describes a safe method for preparing it with nitric acid.

Brooman has patented a process in England, founded on the decomposition of bones or mineral phosphates by means of sulphuric acid, and subsequent action of an alkaline chloride, carbonate, sulphate or nitrate on the superphosphates which are formed. Ch. N. 168. It is noticed that this process is the subject of a patent granted to Gerard de Meley.

CHLORINE.

Th. Schlœsing has observed that, when pure binoxyd of manganium is treated with a mixture of nitric and hydrochloric acid, at a certain point of concentration and by the application of heat an evolution of red fumes and of chlorine takes place; that below this point the mixture even by boiling gives off only chlorine, all the nitric acid remaining behind in combination with protoxyd of manganium; that the nitrate thus formed on calcination yields pure binoxyd of manganium, and the red fumes, which by the action of air and water are again convertible into nitric acid. He founds on these reactions a new process for the preparation of chlorine on the large scale. Compt. lv. 285. Ch. C. B., 1863, p. 7. Rép. xix. 89.

C. Schrader contributes notes on the manufacture of bleaching powder of superior quality, and the yield of the various processes. Ch. C. B. 1863, No. 10.

Several instances of the spontaneous decomposition of bleaching powder are noticed; and likewise an explosion of a bottle containing Labarraque's solution (carbonate of soda and chlorine).

Schœnbein noticed that in the action of chlorine on excess of ammonia, besides chloride of ammonium a small quantity of chlorate of ammonia is produced, (J. f. prakt. Ch. lxxxiv. 386). A. Haarhaus and Fresenius have examined this action and, in confirming the above, conclude that this method is not sufficiently accurate for the determination of free chlorine in presence of chlorides. Zeits An. Ch. ii. 59. A. Anderson states that in this reaction, besides nitrogen, some oxygen is evolved, but no chlorate is to be found. Ch. N. 126.

Precipitation of Chlorides. Margueritte's experiments as to the precipitation of mixed alkaline chlorides from their solutions by hydrochloric gas, are not confirmed by C. Schrader (Ann. Ch. Pharm. cxxiii. 265). From a mixture of chloride of potassium and sodium with or without magnesium, the two former are precipitated together in variable proportion; when nearly saturated with acid, chloride of magnesium will likewise fall down.

Hydrochloric acid. H. Hager gives rules for the preparation of pure acid. A tubulated retort is filled to $\frac{1}{4}$ or $\frac{1}{3}$ with 3 parts of salt, and through the tubulure a cold mixture of oil of vitriol (sp. gr. 1·83) 5 parts and of water 1 part is added. Ph. C. H. 1863, 1.

Purification of hydrochloric acid, from arsenic particularly, is recommended to be performed by Glénard after the well known method with sulphuretted hydrogen or solid sulphuret of iron. He also proposes ferric chloride for the purpose of removing any excess of hydrosulphuric acid, which latter does not appear as objectionable as the remedy. J. de. Ph. xlii. 195. Am. J. Ph. xxxv. 254.

Nitromuriatic acid. R. Müller, in order to establish the binatomic character of one of the oxyds of nitrogen assumed as probable by Weltzien (Ann. Ch. Pharm. cxx. 213), has investigated the action of hydrochloric acid on hyponitric acid, and the properties of the latter acid in a free and concentrated state. Ann. Ch. Pharm. cxxii. p. 1.

Chlorate of potassa gives off its oxygen with the following substances, viz.: artificial MnO_2 at 200° C., with CuO at 230°, platinum black or pyrolusite at 260°—270°, with PbO_2 at 280° C. E. Wiederhold in Ann. Phys. Chemie, cxvi. 171. Am. J. Ph. xxxv. 354.

BROMINE.

Hypobromous acid is obtained, according to E. Dancer, by the same reaction, with mercuric oxyd, as hypochlorous acid, (J. Ch. Soc. xv. 477). Spiller had before described some properties of this acid. Ch. N., 1859.

IODINE.

Protoiodide of sulphur is prepared by Guthrie by acting on protochloride of sulphur with hydriodate of ethylic, methylic, or any other fatty ether in a sealed tube. After the evaporation of the hydrochloric ether formed by the reaction, the protoiodide remains behind in crystals. J. Ch. Soc. xiv. 57.

The *soluble iodide of sulphur*, which Cailletet, J. de Ph. xlii. 162, prepares by heating a solution of sulphuret of sodium with iodine, is evidently only a mixture of iodide and polysulphuret of sodium.

Teriodide of sulphur is formed on evaporating a solution of sulphur and iodine in bisulphide of carbon; the compound is easily destroyed by heat. Lamers in J. prakt. Ch. lxxxiv. 94. Ch. N. 159.

POTASSIUM.

Peroxyd of potassium, according to H. V. Harcourt, is a tetroxyd $\dot{K}O_4$. J. Ch. Soc. xiv. 276.

Carbonate of pptassa. Rieckher states that purified pearlash, when free from sulphuric acid and containing no other impurity but silicate, may be converted into pure carbonate by moistening it with concentrated solution of carbonate of ammonia, and evaporating to dryness. N. Jahrb. Ph. xviii. 2. A. D. Circ. vii. 43. [This method has long since been recommended by H. Hager in his Commentary.]

Iodide of potassium. F. Mohr publishes an elaborate paper on the preparation and properties of this salt. N. Rep. x. 145. The opaque variety owes this property to some carbonate of potassa inclosed between the lamels of the crystals, and always results from a solution containing an excess of the alkaline carbonate. Iodic acid is removed by a solution of ferrous iodide.

The best method of preparation is the one officinal in our Pharmacopœia.

Bicarbonate of potassa, according to Anthon, at a temperature of 40° to 55° F. requires 3·83 parts of water for solution. The saturated solution has a specific gravity 1·1536, and contains 20·7 per cent. of the crystallised salt. Polyt. J. clxi. 216.

W. Stevens Squire comments favorably on Liebig's method for the preparation of alkaline iodides. Pharm Jour. and Trans. Am. J. Ph.

N. D. P. Maillard has patented a peculiar arrangement for extracting potash from the ashes of peat. Ch. N. 153.

Stassfurthite from near Magdeburgh is freed from soluble chloride of magnesium by calcination. A process for the extraction of the alkalies by this process has been patented in England. Ch. N. 168.

SODIUM.

Caustic Soda. A process for the preparation of this substance in pure state on a large scale, is given by Ph. Pauli. Ch. N. 134. Am. J. Ph. xxxiv. 431.

Wœhler for the same purpose simply calcines nitrate of soda with binoxyd of manganium. Ann. Ch. Pharm. cxix. 375. Am. J. Ph. xxxiv. 526.

The processes employed in England for the manufacture of commercial caustic soda are described by A. N. Tate, (Pharm. J. Trans. (2) iv. 111. Ch. N. 148) and by F. Kuhlman (Rép. Ch. appl. iv. 205. Ch. C. B., 1863, 16).

Peroxyd of sodium. Together with the peroxyd of potassium. H. V. Harcourt has examined this substance, which proved to be a dinoxyd (binoxyd). J. Ch. Soc. xiv. 276.

Soda from cryolite. J. Thomson claims to have been the first to establish the practicability of extracting soda from cryolite, in 1857. Polyt. J. clxvi. 443. Am. J. Sc. xxiv. Am. J. Pharm. xxxv. 244. J. Bing describes a process for the purpose. Rép. Ch. appl. Ch. N. 167. Am. J. Ph. xxxv. 254.

Le Blanc's process for the manufacture of soda. A Scheurer-Kestner reviews the several theories which have been advanced in connection with Le Blanc's process, especially those of Dumas, Unger, Brown, and Kynaston. Rép. Ch. p. and appl. Ch. N. 155. W. Gossage in the following number of the Ch. N. states that in a patent taken by him in 1838 he advanced the same theory now appropriated by other chemists; he assumes in the black ash a monosulphide of sodium in simple mixture with carbonate of soda and caustic lime.

Hyposulphite of soda is now manufactured in England on a large scale, by the method long practised in this country, i. e. passing a current of sulphurous acid through a solution of the sulphuret. Rép. Ph. xix. 175.

Bicarbonate of soda, according to Anthon (Polyt. J. clxi. 216) requires for solution 12·09 parts of water at 52° F.; the saturated solution has a density = 1·0612, and contains 7·64 per cent. of crystallised bicarbonate. From a saturated solution containing more carbonate, the latter is precipitated by a current of carbonic acid gas in the form of bicarbonate.

Phosphate of soda. Ferrein states that, contrary to what is usually accepted, this salt is soluble in 11·73 p. HO at 13° C., but to any extent in boiling water. Reese (Ph. Zeits. Russl., 1862, 101) has arrived at different results. Wittstein reiterates the statement of Ferrein. Viertelj. Ph. xii. 226.

CÆSIUM AND RUBIDIUM.

These rare alkaline metals, which may prove to be of considerable interest and importance in vegetable and agricultural chemistry, are treated in various papers by R. Bunsen (Ann. Ch. Pharm. cxxii. 347, on the preparation of rubidium salts from the residues of lepidolite). Than (Ann. Ch. Pharm. Suppl. ii. 84, on the occurrence of rubidium in the ashes of oak-wood); L. Grandeau (Compt. J. de Ph. xli. 480. Ch. N. 131. Am. J. Ph. xxxiv. 442; on the occurrence of rubidium in the ashes beet-root, tobacco, coffee, tea, and grape); Erdmann (J. prakt. Ch. lxxxvi. 377. A. D. Circ. vi. 183; occurrence in carnallite, ibid. 448, in felspar); O. D. Allen (Am. J. Sc. xxxiv. 376; on the preparation of salts of cæsium and rubidium from the Hebron (Maine) lepidolite; S. W. Johnson and Allen (Am. J. Sc. xxxv. 94; on the equivalent and spectrum of cæsium; Cs. (cæsium) = 133); R. Bunsen (Ann. Ch. Pharm. cxxvi.)

AMMONIUM.

The formation of ammonia by combustion and evaporation has been referred to under *Nitrites.* Some other sources are mentioned in the section on Vegetables and Agricultural Chemistry.

That ammonia is formed by the agency of carbonate of baryta from atmospheric air and water has been shown by Marguerite and Sourdeval (Proc. Am. Ph. Ass. for 1862). H. Fleck (Bolley's Handbuch der chemischen Technologie ii. 2, p. 48) gives some successful experiments, where slaked lime is used for the same purpose, without the previous formation of cyanide.

Liquid Ammonia. An apparatus for its preparation in chemical laboratories is described by R. Fresenius. Z. anal. Ch., 1862, 186. Ch. N. 153.

Bicarbonate of ammonia. Some crystals which were deposited in the tubes through which coal gas had been passed on its way to the purifiers, were examined by Schrotter, and proved to be bicarbonate of ammonia ($NH_4O,HO,2CO_2$). Ch. N. 132.

Chloride of ammonium. C. Crace Calvert describes a new apparatus and method for the preparation of this salt in a pure state. The iron is retained in the retorts when the mixture to be sublimed is previously mixed with 5 per cent. of superphosphate of lime, or still better 3 per cent. of phosphate of ammonia. Technologiste, Nov., 1861, 70. N. Jahrb. Ph. xvii. 227.

Decomposition of vapors at high temperatures; at lower temperatures.—Dissociation. The researches of Deville on the dissociation of water have been referred to above. The same chemist had before directed attention to the unusual properties of the vapors of compounds at high temperatures, as have Cannizaro and H. Kopp, while Bineau and Gerhardt explain them in some cases by assuming that the vapors are mixtures of products of decomposition; Kekulé (Ann. Ch. Pharm. cvi. 143) does so in particular to explain the abnormal condensation of substances belonging to the chloride of ammonium type. Pebal has now furnished the proof for the decomposition of chloride of ammonium, by direct experiment with an apparatus described in Ann. Ch. Pharm. cxxiii. 199.

Iodide of ammonium. W. H. Pile proposes to prepare this salt by double decomposition from iodide of potassium and bitartrate of ammonia. The resulting product amounts very nearly to the calculated quantity. Am. J. Ph. xxxiv. 390.

Salts of ammonia. P. Robertson has proposed a process for preparing ammoniacal products by the dry distillation of yeast. Ch. N. 153.

Ammoniacal fumes. W. M. Williams had stated in a lawsuit against a chemical manufacturer in England, that ammonia produces bluish fumes with hydrochloric acid. An anonymous, "F.C.S." in the Ch. N., will have found that the two vapors produce white fumes, against which assertion W. M. Williams maintains his statement. Ch. N. 135.

[It is easy to prove and exemplify, by means of a cigar for instance, that the color of such fumes depends mainly on the degree of diffusion and hydration of the vapor.

Ammonia and sulphur. F. A. Flueckiger finds that flowers and milk of sulphur nearly always contain hyposulphurous acid and ammonia. Sulphur dissolves to a very small extent in Aq. Ammoniæ, but the solution contains no sulphuret. Viertelj. Ph. xii. 321.

BARIUM.

The preparation of rarer metals by means of the alkaline metals and their amalgams has been extended by C. W. Vincent to the production of chromium, and by W. B. Giles to that of manganium. W. Crookes shows that this method, by acting on a chloride with sodium amalgam, allows of extensive application, and describes the process for the preparation of barium. Ch. N. 150. Am. J. Ph. xxxv. 61.

Caustic baryta. Müller proposes to replace the cupric oxyd employed in the preparation of caustic baryta from sulphuret, by oxyd of zinc. J. prakt. Ch. lxxxii. 52. [There appear to be even more practical difficulties in this process, and for ordinary purposes at least it does not appear preferable to Mohr's.]

CALCIUM.

Iodide of calcium. Hesse prepares this salt by precipitating a solution of iodide of iron, with milk of lime. Ch. C. B., 1862. Ch. N. 133.

Is the preparation free from magnesium, and therefore not too deliquescent?

Hyposulphite of Lime. J. Laneau describes a method for preparing this salt in crystals. J. Ch. Méd. Am. J. Ph. xxxv. 223.

Carbonate of lime formed in calcareous waters is soluble, and imparts to the water an alkaline reaction, until it has become crystalline, when it is precipitated. Pettenkofer, Polyt. J. clxv. 118.

C. Schrader has made experiments on the absorption of lime in the charcoal filters of sugar-refineries. Polyt. J. clxv. 289.

MAGNESIUM.

Deville and Caron confirm the researches of Bussy and Bunsen on this metal, and describe its preparation with sodium by the dry way. Ann. de Chim. Ph. lxvii. 340. Ch. N. 184. A so-called improvement in the manufacture of this metal has been proposed by Sonstadt. Ch. N. 185.

Magnesia. A. Vée describes some improvements in the preparation of calcined and hydrated magnesia, and for its examination. J. de Ph. xlii. 84. J. Ph. xxxiv. 522. A. D. Circ. vii. 23. Ch. N. 146. Lepage makes an objection to Vée's method for discovering alumina, which is answered by Vée. Rép. Ph. xix. 67.

Basic sulphate of magnesia. The flocculent precipitate which sometimes forms when a solution of ordinary sulphate is mixed with ammonia and its chlorides, according to Bloxam, is a crystalline basic sulphate, the composition of which is expressed by $6MgO\,SO_3+10HO$. Ch. N. 160.

ALUMINIUM.

In a paper on this metal (Ch. N. 133) J. W. McGawley describes the process for its preparation from commercial sulphate and from cryolite.

Aluminates. Gaudin in a communication to the French Academy gives the preparation of a soluble aluminate of baryta; lime-water precipitates from the solution an insoluble aluminate of lime. He states that the aluminate of baryta may be used for the preparation of a pure sulphate of alumina by precipitation with sulphuric acid. Compt. Ch. N. 133.

J. Thomsen in a paper referred to sub *sodium* describes the preparation of sulphate of alumina from cryolite ; and the same manufacture is the subject of a paper by Sauerwein, from Mittheil. Hanov. Gewerbver, 1862, 170, in Polyt. J. clxv. p. 443.

MANGANIUM.

Manganous Acid. Gorgaeu believes the black oxyd, under circumstances, to be an acid which forms salts with alkalies in the proportions of 5 and 15 eq. of acid to 1 of alkali. Ann. Chim. Ph. (3) lxvi. 151. Ch. C. B., 1863, No. 10.

Permanganic acid. A. Ferreil describes the preparation of this acid by the same method as used by Aschoff. Bull. Soc. Chim. de Paris. Ch. N. 139. Am. J. Ph. xxxiv. 408.

IRON.

Iron and steam. Opinions as to the action of steam on hot iron with reference to steamboilers and their liability to accidents, have been given by Faraday, Taylor, and Brandes, to the London Board of Trade. Ch. N. 144.

Iron reduced by hydrogen, according to Dusart is not metallic iron, but the suboxyd, Fe^2O, of Arfvedson. J. de Ph. xxxix. 415.

Poitevin (Compt. lii. 94) finds that solution of ferric salts are reduced in the sunlight, not only by alcohol, ether, etc., but also by acetate of ammonia, alloxantin, glycerin, and tartaric acid.

Lefort notices the occurrence of iron pyrites in a tufa of Puy-de-Dôme and their gradual passage into ferroso-ferric sulphate and phosphate. J. de Ph. xliii. 20.

Ferrous salts. De Luca describes the properties of pure ferrous iodide, citrate, and carbonate. Compt. lv. 615. J. de Ph. xliii. 57. Ch. C. B., 1863, p. 71.

Ferric sulphate. This usually deliquescent salt is prepared by J. Lawrence Smith in the effloresced state. Am. J. Ph. xxxv. 203. A. D. Circ. vii. 106.

Ferric Chloride. A formula for the preparation of solid ferric chloride is given by W. Procter, Jr. Am. J. Ph. xxxv. 110. A. D. Circ. vii. 54.

A table of specific gravity and percentage of the solution (Liquor Ferri sesquichloridi) is copied from Hager's *Manuale* in A. D. Circ. vi. 153.

D. L. (Ch. N. 155) calls attention to the diversity in the reactions produced by solutions of ferric chloride containing an excess of oxyd.

Magnetic peroxyd. The magnetic properties of peroxyd of iron when prepared from black oxyd by calcination or fusion with oxydisers has been pointed out by J. Robbins. Malaguti notices the same in the case of hydrated oxyd when precipitated by ammonia, but not with fixed alkali. Pharm. J. Trans. (2) iv. 393.

NICKEL.

W. G. Russell finds the atomic weight of this metal to be 29·369. Ch. N. 167. J. Ch. Soc. xv. 51.

CADMIUM.

B. Wood describes some of the physical properties of this metal, and states that some of its alloys possess greater fusibility than those of bismuth. J. Frankl. Inst. Ch. N. 145.

COPPER.

Metallic copper, in fine powder, is best prepared, according to H. Schiff, by shaking up a solution of sulphate of copper with a quantity of small crystals of the salt and granulated zinc. J. de Ph. xlii. 501.

Cupric oxyd. Tennant & Co., of Manchester, manufacture this oxyd on a large scale by passing a current of heated air over the metal; the resulting product is a mixture of cuprous and cupric oxyd with about 30 per cent. of metal. On a small scale this process furnishes a mixture containing at least 40 per cent. of metal. This oxyd is available for combustion in elementary analysis. C. C. Stanford describes several other processes for the same purpose; the sub-acetate and best blue verditer are the materials for the purpose; another good method is the calcination of 3 parts of exsiccated sulphate with 3 of subacetate; but the best he found was to liquify equal parts of sulphate of copper and carbonate of soda in a porcelain dish, and afterwards heating the mass in a crucible, and lixiviating it. Ph. J. Trans. (2) iv. 390.

Erlenmeyer still prefers the oxyd prepared by the calcination of cupric nitrate; it is freed from chlorine by heating it in a current of moist air. Ann. Ch. Pharm. cxxvi. 32.

Cupric chloride. The same writer (*ibidem*, p. 392) observes that the blue chloride when free from uncombined water is not deliquescent, which is, however, the case with the green modification, which contains an excess of water.

LEAD.

W. Baker ascribes the pink tint of white-leads to the presence of a minute portion of copper. It had before been stated that in Pattenson's process the copper was concentrated together with the silver in the fluid portion. He finds that such is not the case. Phil. Mag. xxiii. 534. Ch. N. 145.

A. Pleischl, in contradiction to the statement of the text books, finds that lead is not precipitated by tin from acetic solutions; that on the contrary it precipitates metallic tin from the protonitrate and protochloride of that metal. On investigating the statements of Proust and Fisher, that acetic acid or vinegar did not dissolve any lead in presence of metallic tin, he finds them inaccurate. Polyt. J. clxiv. 200, from Sitz. ber. Wien. Akad.-Math. Nat. Kl. xliii. 555.

Wœhler obtained metallic lead of a copper color from the nitrate by the galvanic current. Ann. Ch. Pharm., 1862, Suppl. ii. 135.

Crystals of metallic lead are obtained in the manner usually employed for crystallising sulphur or bismuth, by fusing. Stolba. (Polyt. J. clxiv. 371).

Rodwell has determined the degree of solubility of sulphate of lead in hydrochloric and in nitric acids. Zeitsch. Ch. Ph. vi. 31.

THALLIUM.

The metal discovered by W. Crookes in 1861, in some selenium residues, through the spectroscope, has since been found by him in the crude sulphur distilled from pyrites, and a process for its preparation as well as the properties of many compounds described. Ch. N. iii. 194. ib. 303. v. 349. Ph. J. Trans. (2) iv. 63. It was afterwards also observed by A. Lamy (Ch. N. vi. 137, p. 29. Am. J. Pharm. xxxiv. 402) for whom Dumas puts in an extraordinary claim of priority (Ch. N. 162, from Compt. lv. 866). Papers on this metal and its properties and a large number of its compounds have been published by Crookes (Ch. N. 175, etc.). F. Kuhlmann, Jr. (Compt. lv. 607. Ann. Ch. Pharm. cxxvi. 75). R. Bœttger on its production from the lead chamber deposit at Oker, and some of the properties of the metal (Ann. Ch. Pharm. cxxvi. 175).

TIN.

Stannic oxyd. A process for the preparation of this substance, and of *stannous* and *stannic phosphate* is given in A. D. Circ. vii. 60.

CHROMIUM.

An elaborate paper on the composition of chromate of chromium, and other chromates has been published by F. H. Stover and Ch. W. Elliot; these researches were instituted for the purpose of establishing a new formula for black oxyd of manganese. Ch. N. 145—152, incl.

Chromic acid. The process in use at the Pharmacie Centrale is copied from J. de Ph. in A. D. Circ. vii. 105.

MOLYBDENUM.

An essay on the preparation and properties of molybdic acid, by A. v. Wich is contained in Ann. Ch. Pharm. Viertelj. Ph. xi. 44.

ARSENICUM.

Ch. L. Bloxam communicates researches which prove the tribasic character of arsenious acid. J. Chem. Soc. xv. 281. Ch. N. 131. Am. J. Ph. xxxiv. 442.

The arseniate of soda of the English print works is manufactured by fusing together arsenious acid with caustic soda and crude nitrate. Rép. Ch. appl. Rép. Pharm. xix. 175.

Mrazek has found among other impurities $\frac{3}{8}$ per cent. of arsenicum in a short wrought-iron. Polyt. J. clxvi. 458.

ANTIMONY.

The manufacture of metallic antimony in Upper Hungary, is described by Rœssner, in Polyt. J. clxvi. 449. Ch. C. B., 1863, 47.

BISMUTH.

The presence of arsenicum in commercial bismuth is again referred to by W. B. Herapath (Ch. N. 159). The process which he recommends for removing this impurity from the officinal preparation, i. e. boiling with fixed caustic alkali, will hardly be found to answer, except for very small quantities.

In a paper on purification of bismuth and detection of arsenic, W. B. Herapath also mentions that the alkaline liquid obtained by this method of purification, probably contained thallium. Pharm. J. Trans. (2) iv. 302. Am. J. Ph. xxxv. 145.

W. Crookes (Ch. N. 170) did not succeed in detecting thallium as observed by W. B. Herapath. He finds that hydrogen passed over metallic thallium carries off some of it and imparts to the flame its green-color, but it is deposited only in a cold, not in a heated tube. The mirror is dissolved by hypochlorites; it forms an iodide which does not dissolve in hydrosulphate of ammonia.

Ternitrate of bismuth. H. Reinsch finds that bismuth is not precipitated from its nitric solution by other metals in the reguline state, but as subnitrate. N. Jahrb. Ph. xvii.

Bismuthic acid, BiO_5+2HO. Bœdeker and Deichmann observed that a solution of ternitrate mixed with a concentrated solution of cyanide of potassium in excess, precipitates bismuthic acid. Ann. Ch. Pharm. cxxiii. 61. Pharm. J. Trans. (2) iv. 377.

MERCURY.

Ammonio-chlorides of mercury. Several new combinations of the chlorides of ammonium and of mercury are described by J. D. Holmes. Ch. N. 134.

Schwarzenbach has observed that white precipitate left in contact with an excess of iodine and alcohol forms an explosive compound preceded by the formation of mercuric iodide. Viertelj. Ph. xi. 27.

Copper-amalgam is best prepared, according to Guilielmo, by rubbing together 4½ p. powdered blue vitriol with 3½ of mercury and 1 p. of powdered iron in 12 p. of water of 60—70° C. Viertelj. Ph. xii. 219.

SILVER.

H. Vogel finds that the gray or brownish black silver formed by reduction from nitrate solutions, consists partly of fine acicular crystals, partly of indistinctly crystalline granules. Organic substances precipitate the silver partly in this form, and in part as mirror. An excess of ammonia retards the precipitation. The photographic print consists of the black precipitate. The conditions which must be avoided in silvering glass, are those which are required in photography. J. prakt. Ch. lxxxvi. 321. An ammoniacal solution of silver containing caustic fixed alkali deposits by slow vaporisation foliated crystallised *oxyd of silver;* the crystals appear to belong to the regular system. After standing in the air for some time the same solution commences to deposit lemon-colored crystalline needles of *carbonate of silver* of rhomboidal shape. Ch. C. B., 1863, p. 9.

Several salts of *suboxyd of silver* have been prepared and examined by Rautenberg. The hydrated suboxyd of copper dissolves to a small extent in a dilute solution of silver and precipitates after some time shining lamels of metallic silver.

Chloride of silver is readily reduced to metal by boiling it with an alkalised solution of sulphate of soda mixed with a little sal ammoniac. Ann. Ch. Pharm. cxiv. 119.

Nitrate of silver from coin is obtained free from copper, according to Laurenty, by digesting the solution for some time with the oxyd precipitated from a portion by caustic alkali. Ch. C. B., 1863, p. 336.

The process of Berlandt and others for the precipitation of metallic silver, by means of ferrous sulphate, will fail in most cases.

An ammoniacal solution of cuprous chloride added to a solution of nitrate of silver precipitates the latter metal in the reguline state and pure. One litre of commercial ammonia will dissolve 58 grammes of silver in the form of chloride. Millon & Commaille, Compt., 1863. Ch. N. 179.

PLATINUM.

Deville and Debray communicate further researches on the metallurgy of platinum, and on the processes of smelting used by Matthey of London, and Heræus of Hanau. Compt. Ch. N. 146. Am. J. Pharm. xxxv. 119.

Mercurous chloride added to a warm solution of chloride of platinum, according to Schwarzenbach produces a black precipitate which is a mixture of calomel and metallic platinum, while the solution, as observed by Bonsdorff, contains a crystallisable double salt, $PtCl_2+2Hg_2Cl$. Viertelj. Ph. xi. 21.

CYANOGEN AND DERIVATIVES.

Hydrocyanic acid. Aschoff has published researches on the formation of this acid from ferrocyanide and sulphuric acid, in which he proves experimentally the correctness of Everett's formula, and Wittstein's observations. For the distillation of the acid, he prefers a Florence flask as a still, and a cooler similar to that employed by Mitscherlich in his phosphorus-test. The acid keeps unchanged, in the light or protected from it, only when the access of air is completely excluded; dilute acid exposed to the light in well closed vials decomposes after some time, assuming a brown color and depositing para-cyanogen; the coloration is prevented by the addition of a small quantity of sulphuric acid. Arch. Ph. cvi. 257. Wiggers, in commenting on the paper, suggests that the presence of sulphuric acid does not prevent the decomposition, but serves to bind the ammonia, which is formed as a product of decomposition previous to the appearance of paracyanogen. Cannst. Jahresbericht, xi. 1, p. 106.

Pelouze and Kuhlmann have observed that hydrochloric and hydrocyanic acid, under certain circumstances, form chloride of ammonium and formic acid. A. Berthold finds that this decomposition does not always take place, unless some alcohol be added to the mixture. Ann. Ch. Pharm. cxxiii. 63.

Ferridcyanide of potassium, according to F. X. Kirmayer, when exposed to the light with or without access of air, is partly decomposed into ferrocyanide and Prussian blue. N. Rep. xi. 356.

Schwarzenbach finds that white precipitate boiled with a solution of platinocyanide of potassium, yields, besides Kane's chloride of mercuramin, and chloride of potassium, a double salt of cyanide of ammonium and platinum. Viertelj. Ph. xi. 26.

Sulphocyanide of ammonium is prepared by Millon, by digesting and then distilling bisulphide of carbon with ammonia and alcohol; it remains as residue. J. de Ph. Ph. C. H., 1863, No. 24.

Cyanide of zinc is obtained, according to Oppermann, by passing hydrocyanic acid into a solution of equivalent quantities of sulphate of zinc and acetate of soda; it forms a white, crystalline precipitate. J. de Ph. xxxviii. Arch. Ph. clxiii. 174.

CARBOHYDRIDES AND VOLATILE OILS.

Coal-gas. Experiments on the igniting point of coal-gas and mixtures of the same with air, etc., are communicated by E. Frankland. Ch. N. 135.

Petroleum. The importance which the rock-oil of the United States and Canada has gained as illuminating material and for industrial purposes, has caused the publication of a number of interesting papers on its history, composition and uses. Among such is: History of Petroleum, by T. Sterry Hunt, from the Canadian Naturalist, in Ch. N. 135, and following numbers.

The so-called benzine from American petroleum has been examined by Schorlemmer (Ch. N. 174) and Pelouze and Cahours

Compt. lvi. 505, and 1241. Am. Ch. Pharm. cxxiv. 289. Ch. N. 177. Am. D. Circ. vii.

Coal-oil. Schorlemmer has likewise separated the hydruretted radicals of several fatty alcohols from the oil of Cannel-coal (Wigan). J. Chem. Soc. xv. 419.

C. Greville Williams has continued his researches on the products of the distillation of Boghead-coal, which so far appear to prove the existence in them of the homologues of marsh-gas, besides such of benzole and olefiant gas. J. Chem. Soc. xv. 130, ibidem, p. 359.

Synthesis of carbohydrides. A. Wurtz (Compt. liv. 387. Ann. Ch. Pharm. cxxiii. 202) and Berthelot (Compt. liv. 515, 640. Ann. Ch. Pharm. cxxiii. 207. Ch. N. 143) publish further researches on the artificial formation of these bodies. See also papers by Wœhler (Ann. Ch. Pharm. cxxiv. 220) on the formation of acetylen; Rieth and Beilstein (Ann. Ch. Pharm. cxxiv. 242) on that of amylen and propylen.

Paraffin. Some applications of this substance for laboratory purposes are mentioned by Aug. Vogel (Polyt. and J. clxiii. 139. Am. D. Circ. vi. 86). He also determined its solubility in benzol (7·7 parts at 46° C.), chloroform (0·22 part at 23° C.), bisulphide of carbon (1 part at 23° C. in 1 part of the solvent.) Polyt. and J. clxiv. 221.

Aromatic radicals. Cannizaro and Rossi have obtained the radicals of benzylic, cuminylic, and anisylic alcohol by the action of metallic sodium, in the same manner as those of the fatty alcohols from hydrochloric ethers; they are white crystalline substances; benzyl fuses at 52° C. Ann. Ch. Pharm. cxxi. 250.

Phenyl. This radical has been produced by R. Fittig, from monobromo-benzole by means of metallic sodium, as a crystalline substance; he has also examined some of its derivatives. Ann. Ch. Pharm. cxxi. 361, cxxiv. 275.

Caoutchouc and gutta-percha. C. Greville Williams reviews the researches of Gregory, Bouchardat and Himly. On subjecting caoutchouc to dry distillation two carbohydrides of constant boiling point are obtained, *isoprene*, $C_{10}H_8$, boiling between 37° and

44° C., and Himly's *caoutchin*, $C_{20}H_{16}$, boiling at 171° C.; he concludes that they belong to the oil of turpentine series from the similarity of behaviour with oil of turpentine towards bromine, and on account of caoutchin being, like the oil, convertible into cymole or hydruret of thymyl. Gutta-percha yields a distillate, which contains about 5 per cent. of isoprene and 20 per cent. of caoutchin. J. Chem. Soc. xv. 110.

Camphenes. Berthelot (J. de Ph. xxxvii. 347) has examined into the absorption of oxygen by oil of turpentine. He finds that it is taken up by the oil in 3 forms, viz.: merely dissolved and therefore in a condition to be removable by the other gases; chemically combined and forming resins; and, lastly combined, in a condition to oxydise other substances.

In a subsequent publication (Compt. lv. 496 and 544. Ch. C. B., 1863, p. 51) he describes a number of isomeric and polymeric carbohydrides obtained by the action of alkalies and fatty salts on mono-chlorhydrate of terebenthen (oil of turpentine), the so-called artificial camphor at temperatures between 200 and 220° C.; of these he considers terecamphen to be the regular product of decomposition, a crystalline isomere of terebenthen, fusing at 45° and boiling at 100° C.

Oppenheim has studied the action of the chlorides, bromides and iodides of phosphorus, and chloride of benzoyl, on oil of turpentine; it appears to be the same as that of the respective hydracids of the halogens. Bull. Soc. Chim. Juille, 1862. Ch. C. B., 1863, p. 86.

Anthracene. The paranaphthalin or anthracene of Dumas and Laurant has been submitted to examination by Th. Anderson. He gives its formula as $C_{28}H_{10}$, and finds it to be identical with the carbohydride some time ago described by Fritzsche, who confirms this. J. Chem. Soc. xv. 44.

Camphrene. H. Schwanert has examined the action of sulphuric acid upon camphor, and obtained, as had previously been done by Delalande and Chautard, a volatilisable oil, *camphrene*, of a somewhat different constitution from that camphrene of Chautard. He gives its formula as $C_{18}H_{14}O_2$, which shows it to be isomeric with phorone, and like the latter it yields with anhydrous phosphoric acid, a carbohydride of the formula $C_{18}H_{12}$, which is, however, not identical with cumole, its boiling point being between 170° and 175° C. With nitric acid it forms a bibasic acid, *camphrenic acid.* Ann. Ch. Pharm. cxxiii. 298.

Volatile oils. At the meeting of the British Association for the Advancement of Science, at Cambridge, October, 1862, Dr. Gladstone read a paper on a number of essential oils; this, your committee have as yet failed to procure.

A paper on the examination of volatile oils, by Bolley, in J. de Ph. xli. 453, is copied from his treatise on technical analysis noticed under the head of *Literature.* It contains nothing new.

Oil of mace. C. Schacht has examined the oil distilled from mace. It contains no stearoptene, but an isomere of oil of turpentine and a hydrate of the same; the former which he calls *macene*, boils between 160° and 162° C. Arch. Ph. clxii. A. D. Circ. vii. 57.

Oil of rue. C. Harbordt confirms Williams' formula for this oil ($C_{22}H_{22}O_2$), and considers it to be a mixed ketone, not an aldehyde. Ann. Ch. Pharm. cxxiii. 293.

Oil of peppermint Oppenheim has examined the stearoptene of peppermint, which occurs in commerce as Japanese oil of peppermint mixed with crystals of sulphate of magnesia (see Proc. Am. Ph. Assoc., 1862, 114). It has the composition $C_{40}H_{40}O_4$, and he considers it to be the alcohol of a hydrocarbon *menthyl.* J. de Ph. xl. 295.

Galbanum. Moessmer and Hlasiwetz have published their researches on this resin. By distilling galbanum with water (about 7 per cent. of) a balsamic oil passes over, which, when freed from water, boils at 160° C., and is isomerous with oil of turpentine. The residue from the distillation boiled with lime and then treated with hydrochloric acid yields a precipitate of resin, not quite soluble in absolute ether, nor in alkalies or bisulphide of carbon, but in alcohol. Heated with hydrochloric acid in a sealed tube it yields umbelliferon. By dry distillation this resin furnishes a greenish-blue oil, congealing into mass of crystallised umbelliferon, which is separated by boiling with water. The oil is then of a lazur-blue color, and boils at 289° C. Its composition is expressed by $C_{40}H_{30}O_2$ (alcohol of the radical $C_{40}H_{29}$); it yields with anhydrous phosphoric acid an ether, $C_{80}H_{58}O_2$, and with sodium a hydruret of the radical, $C_{40}H_{30}$. Ber. Wien. Akad. Math. Nat. Kl. xlii. J. prakt. C. lxxxvi. 159. N. Rep. xii. 114.

Guaiac. See ACIDS.

ALCOHOLS, ETHERS, ETC., PROPER.

Methylic alcohol. Eschwege's patented process for deodorising wood-naphtha, is described by H. N. Draper. Ch. N. 150, also, Pharm. J. Trans. (2) iv. 304. Am. J. Ph. xxxv. 148.

Chloroform, according to Genther, is decomposed by caustic alkali into carbonic oxyd and chloride of the alkaline metal. Ann. Ch. Pharm. cxiii. 121. A. D. Circ. vii. 10.

Bromoform had before been shown by Hermann to undergo the same decomposition. Ann. Ch. Pharm. cxv. 214.

Ethylic alcohol. (Alcohol). A. Wurtz has formed alcohol from ethylenic oxyd, by allowing its aqueous solution to act on sodium-amalgam. Ann. Ch. Pharm. cxxii. 358. The same takes place with a dilute solution of aldehyde, ibidem, cxxiii. 140. Coal-gas, as a source of alcohol, has again been proposed by Cotelle. His process, etc., is described by Mallet. Ch. N. 161, 162.

Wine. A. Béchamp has published researches on French wines, their normal constituents, and the changes to which they are subject. J. de Ph. xlii. 5.

Glénard has studied the influence of the tartaric acid and its determination in wine. J. de Ph. xli. 25.

Nicklés recalls attention to his paper, on the fermentation of crude tartar, published in 1846, in which he mentions similar changes to those alluded to by Béchamp, especially as regards the increase of potash and formation of propionic acid, as the source of which latter Béchamp takes the glycerin formed during fermentation; the increase of potash is imaginary; it is owing to the conversion of bitartrate into neutral tartrate, or some other compound, while the propionic acid is a product of the decomposition of the tartaric acid. Rép. Ph. xix. 27. Am. J. Ph. xxxiv. 507. A paper on the same subject, by Regimbeau, is published in Rép. Ch. xix. 101. He doubts Balard's theory of lactic fermentation, and refers many properties of changed (flat) wines to the tannin they contain.

Ethylic oxyd. (Ether). Berthelot and Péan de St. Gilles, have given new researches on the slow formation of ether with acetic, valerianic, and sulphuric acid, on the reactions between various acids and alcohol, and on the decomposition of ethers by water, the extent of which appears to depend upon the nature of the acid with which the ether has been formed. J. de Ph. xlii. 100, 231, and 391. Rép. Ph. xix. 221.

Ethyl mercaptan, according to H. Schiff, is formed by the action of sulphide of potassium on an alcoholic solution of acetic ether. Ann. Ch. Pharm. cxviii. 90.

Ethylenic oxyd. A. Wurtz delivered a lecture before the London Chemical Society, on the formation of ethylenic oxyd from Dutch liquid, by means of acetate of silver, and on the properties of this body which are strongly basic. Ch. N. 132.

Ethylenic sulphides. Crafts finds that on mixing bromide of ethylene with an alcoholic solution of mono-sulphide of potassium, a mixture of mono- and poly-sulphide of ethylene results. Bull. Soc. Chim. 1862. No. 3, p. 38. Ch. N. 144.

Propylic alcohol. Friédel supposes that acetone by the action of nascent hydrogen, yields propylic alcohol. Fittig had before examined this reaction, and obtained pinacone. Compt. lv. 54. Ch. N. 146.

Amylic alcohol. (Fusel Oil). Friédel has produced this alcohol from valeraldehyde, by the process of A. Wurtz, i. e. with sodium amalgam. Compt. lv. 54. Ch. N. 146. Wittstein has determined the solubility of this alcohol in water, and of water in amylic alcohol. One part of fusel oil (sp. grav. 0·818, boiling point at 270° F.) requires 39 parts by weight of water, at 61·70 F. At the same temperature, 11·625 parts of fusel oil dissolve one part of water, forming a clear liquid. Viertelj. Ph. xi. 567. According to F. Gerhard, hypochlorite of lime produces with amylic alcohol, not only chloroform, but also chlorobutyl, and butyric acid. Ann. Ch. Pharm. cxxii. 363.

Œnanthylic alcohol has been produced by Bonis and Carlet, by the action of metallic zinc on a solution of œnanthol in glacial acetic acid, which yielded acetate of œnanthyl, and this by the action of caustic alkali gave the alcohol. Thus prepared it boils at 165° C. (calculated, at 173° C.,) Compt. lv. 140. Ann. Ch. Pharm. cxxiv. 352. The products of the distillation of the oil of the mark of wine, with potassa, passing over above 133° C. contain œnanthylic alcohol, boiling between 155° and 160° C. V. Faget in Bull. Soc. Chim. 1862, p. 59. Ann. Ch. Pharm. cxxiv. 355. Ch. C. B. 1863, p. 109.

Phenylic alcohol. (Carbolic acid). A. Riche has published researches on this alcohol, which prove that it is convertible into benzol and its derivatives, but that phenylic alcohol yields derivatives differing in their properties from those of other alcohols. Compt. liii. 586. Ann. Ch. Pharm. cxxi. p. 357.

Benzylic alcohol and other aromatic alcohols, see Carbohydrides.

Nitrobenzole, according to Scheurer-Kestner, when a large excess of ferrous acetate is used for its reduction, is almost completely converted into ammonia and benzole. Bull. Soc. Chim. 1862, No. 3, p. 43. Ch. N. 144.

Glycerin. Lourenço shows that this alcohol is convertible into propylic alcohol, by the action of sodium amalgam on its monochlorhydrate. Compt. lii. p. 1043. J. prakt. Ch. lxxxv. 502.

L. Barth has examined the action of bromine on glycerin. In the presence of water they form glyceric acid, bromoform and carbonic acid; without water, a bromurated oil is produced, which on distillation yields glycolic acid. Wien. Ak. Ber. xlvi. 276. Ch. C. B. 1863, p. 8.

Nitroglycerin (glonoin, pyro-glycerin) is prepared pure, according to Sobrero, by adding to a cooled mixture of 2 vols. of sulphuric acid (66° B.) and 1 vol. nitric acid, (40° B.) about $\frac{1}{6}$ of its bulk of glycerin. It dissolves at once, but soon separates oily drops which collect on the surface, and after washing with 15 to 20 times their bulk of ice-cold water, form a dry crystalline substance, odorless when pure, of a density = 1·6, in its properties resembling pyroxylin; it produces headache and is very poisonous. J. Chim. Méd. (4) viii. p. 367.

Perls (J. prakt. Ch. lxxxviii. 148) and Huppert (ib. p. 150) have repeated von Deen's experiments, and find that the action of electrolysis, or of oxydising substances on glycerin, does not produce an acid, but an aldehyde, which reduces the salts of gold and silver and Fehling's solution. Werther (ib. p. 151) remarks that acrol has a similar action on the solution of copper, though not so strongly pronounced, also on the salts of gold and silver.

ORGANIC ACIDS, AND COMPOUNDS.

Formic acid. Kolbe and Schmidt have found that metallic potassium, in an atmosphere of moist carbonic acid, is converted into a mixture of bicarbonate and formiate of potassa. Ann. Ch. Pharm. cxix. 251. Ch. N. 125.

Ferric formiate according to Atzel, is prepared by digesting hydrated ferric oxyd with aqueous formic acid; evaporation at 70° C. leaves a pale yellow powder, soluble in water; composition: $Fe_2\ O_3,\ 3C_2\ HO_2.$ Arch. Pharm. clvii. 1.

Acetic acid. Fused chloride of zinc, with anhydrous acetic acid, heated in a sealed tube, produces water, hydrated acid, and a humus-like substance. Bauer, in J. prakt. Ch. lxxxiv. Ch. N. 142.

Chlorine converts anhydrous acetic acid into chloride of acetyl and monochlor-acetic acid. Gal. in Compt. liv. p. 570. Ch. N. 143. Wurtz, in Rép. Ch. 1862. p. 179.

Pasteur has proposed a new process for the manufacture of vinegar, in which he uses the *mycoderma aceti* as ferment. Rép. Ph. xix. 45.

Glacial acetic acid. A process for its preparation, of doubtful value, is given by Tillmans. J. Chim. Méd. Am. J. Ph. lxxxv. 128.

Acetate of ethyl (acetic ether). J. M. Crafts finds that acetate of ethyl, when treated with bromine in sealed tubes produces bromide of ethyl and brom-acetic acid; hydrobromic acid, under similar circumstances, yields bromide of ethyl and acetic acid. Am. J. Sc. xxxvi. 42.

Butyric acid. According to Friedel and Machuca, monobromobutyric acid heated with ammonia in sealed tubes yields a crystalline homologue of glycocol. Compt. liv. p. 220. J. prakt. Ch. lxxxviii. 60.

Propionic acid. Bibromo-propionic acid the same chemists prepared for their experiments, as a crystalline mass, by the action of bromine on monobromo-propionic acid at 140° C. *Ibidem.*

Valerianates of iron. By triturating and digesting hydrated ferric oxyd with aqueous valerianic acid, Atzel has obtained a mixture of neutral ferric valerianate ($Fe_2 O_3, 3C_{10} H_9 O_3$) soluble in alcohol, which on drying loses a third of the acid; and a basic salt ($6 Fe_2 O_3 + 5C_{10} H_9 O_3$) of an ochre color, insoluble in alcohol and water, and floating on the latter. Arch. Pharm. clvii. 1.

Capronic Acid, according to Cahours, when treated with $\frac{2}{3}$ its weight of bromine at 140°C., yields a colorless acid boiling at 240°C., which by the action of oxyd of silver or potassa passes into leucinic acid, with ammonia into leucin. Compt. liv. 175. J. prakt. Ch. lxxxviii. 53.

Œnanthic acid is stated by A. Fischer, to be a mixture of caprinic and caprylic acid, the former predominating. Ann. Ch. Pharm., cxviii. 307. Arch. Ph. clxiii. p. 177.

Xanthic acid, (Xanthogenic acid). Hlasiwetz has described a number of the metallic salts of this acid. Ann. Ch. Pharm., cxxii. 87. Ch. N. 142.

Kekulé and Linnemann have examined into the action of iodine on some of the compounds of this acid. Ann. Ch. Pharm. cxxiii. 273.

Urate of lithia. G. v. Schilling has prepared and analyzed this salt, and finds that it is an acid salt, of the formula $LiO, HO, C_{10}H_2 N_4 O_4$, soluble in 39 parts of boiling water, in 115$\frac{3}{4}$ parts of 39° C., and in 367 4-5th parts at 20° C. Ann. Ch. Pharm. cxxii. 241.

Oxalic acid, exposed to light with uranic salts in solution, undergoes decomposition, according to Seekamp. Ann. Ch. Pharm. cxxii. 113. Ch. N. 138.

Oxalate of ammonia, according to W. Heintz, is much less soluble in solutions of ammoniacal salts, than in water, which explains its frequent precipitation in analysis. J. prakt. Ch. lxxxvii. 309.

Oxalate of copper has been shown by F. Sestini to be soluble, to some extent, in nitric acid, and therefore not well applicable for the separation of copper from lead and zinc. Zeits. Anal. Ch. 1863, i. p. 21.

Oxalate of ethyl is prepared by Kolbe by a new method, yielding 70 p. c. of the calculated amount. Ann. Ch. Pharm. cxix. 172. Ch. N. 133.

The manufacture of oxalic acid on the large scale, by Possoz's process, is described in Lond. Ch. Drug, April, 1863. Am. J. Ph. xxxv. 359.

Acrylic acid. A. Claus publishes researches on this acid, and on acroleïn; the latter, by the action of an alcoholic solution of alkali, forms an acid which possesses the composition of acroleïn, but a six-fold equivalent; he calls it *hexacrolic acid.* The only method which yields acrylic acid of sufficient purity and quantity, is that of Redtenbacher, with oxyd of silver. J. prakt. lxxxviii. p. 55. Ann. Ch. Pharm. ii. Suppl. 117.

Succinic acid has been prepared synthetically by Maxwell Simpson, from cyanide of ethyl by means of caustic potassa, of nitric, and of hychochloric acids, and also by nitrate of silver. J. Chem. Soc. xv. 134. This method is also suggested by Limpricht (Lehrb. der Org. Chemie, p. 424).

Azelaïc acid. A. E. Arppe has shown that Laurent's azelaïc acid (*apelaïc* of Berzelius), one of the products of the action of nitric acid on oleïc acid, is identical with Wirz's *lepargylic* and Buckton's *anchoïc* acid and that it may be prepared from oleïc acid, the oil of almonds, castor-bean and cocoanut, and from Japanese wax. Ann. Ch. Pharm. cxxiv. 86.

Malate of iron. When malic acid, according to Atzel, is digested with hydrated ferric oxyd, no salt of constant composition can be obtained; a portion of the acid and of the oxyd is decomposed. Arch. Pharm. clvii. 1.

Maleïnic and *Fumaric acids* form dibromosuccinic acid with hydrobromic acid, and this may afterwards be converted into succinic acid; sodium-amalgam produces the latter acid at once. Ann. Ch. Pharm., Suppl. i. 129 and 338.

Tartaric acid (and malic acid), when heated with concentrated hydriodic acid in sealed tubes, according to Kolbe and Schmitt, form succinic acid. Ann. Ch. Pharm. cxiv. 106. Arch. Pharm. clx. 163.

H. Schiff concludes from his experiments, that tartaric as well as citric acid are tetra-basylous. Compt. lv. 511. Ch. C. B. 1863. No. 15.

Ferric tartrate of potassa, according to Tanner, is prepared pure by digesting the hydrated oxyd from one part of iron, with 2½ of pure bitartrate of potassa and 12 of water; the yield is 2½ times that of the tartar used. Schweiz. Z. Pharm. 1861, p. 151. Nat. Pharm. xxvi. 118.

Ferric tartrates. Atzel finds that a solution of hydrated ferric oxyd in tartaric acid, which may originally contain a neutral salt, on evaporation gives an acid ($4\,Fe_2O_3$, $9\,C_4H_2O_5$) and a basic salt, Fe_2O_3, $2C_4H_2O_5$); the latter by the action of light and heat gradually forms ferrous tartrate, while a portion of the acid is set free or oxydised. Arch. Pharm. clvii..

Tartrate of antimony and potassa. W. J. Zeyer finds that sulphuric, hydrochloric, or nitric acids form precipitates in solutions of tartar emetic, which are mixtures of the acid or salt of the acid, and tartrate of antimony in various proportions, are free from potassa, and by continuous washing leave pure antimonic oxyd. Viertelj. Pharm. xi. 161.

Recent researches of Kekulé on racemic, pyrotartaric, citraconic, itaconic and other acids, are contained in Ann. Ch. Pharm. Suppl. i. and ii. J. prakt. Ch. lxxxvii. 79, and fol. Ch. C. B. 1863, 22.

Aconitic acid, according to Dessaignes, is converted by the action of nascent hydrogen, (sodium-amalgam), into an acid intermediate between aconitic and succinic. Compt. lv. 510. Ch. C. B. 1863, p. 56.

Camphoric acid. R. Kemper has examined a number of the salts of this acid; the alkaline earths form also acid salts. Arch. Pharm. clx. p. 106. A. D. Circ. vi. 165.

Ferric tannate is best prepared, according to Wagner, either by adding a solution of ferric chloride to a neutral solution of tannate of soda (tannin and carbonate of soda), or by precipitating a solution of ferric acetate with tannic acid. Œst. Zeit. Ph. xv. 323. Cannst. Jahresb. 1861, p. 136.

Tannate of zinc. Helm shows that Mathieu's formula for the preparation of this salt, furnishes nothing but tannic acid itself, which has hitherto been used under the belief that it was tannate of zinc. He gives a new formula, which differs also much from that of Hager, and is as follows: 6 ounces of pure sulphate of zinc are dissolved in 48 ounces of water, and then precipitated by a slight excess of ammonia; the oxyd, after being thoroughly washed, is heated to boiling in a porcelain dish with a filtered solution of 3 1-6th ounces of tannic acid in water, and the salt then collected on a filter, washed, and dried. Hager uses nearly 3 times the quantity of tannin.

Kinic acid has been shown by Lautemann to be convertible into benzoic acid, when heated in sealed tubes with hydriodic acid, or by the action of iodide of phosphorus. He finds that kinic acid is converted in the animal organism into benzoic, and ultimately, into hippuric acid, and he believes that the presence of the latter in the urine may be accounted for by the presence of kinic acid in many herbs. Ann. Ch. Ph. cxxv. 9. Am. J. Sc. xxxvi. March, Am. J. Pharm. xxxv. 246.

Schoonbrodt has examined the products of the dry distillation of kinic acid. Kinone, after being nitrated, yields two white alkaloids, when again reduced by hydrogen; one of them resembles aricina. Bull. Soc. Chim. Nov. 1862, p. 107. Ch. C. B. 1863, p. 111.

Larixinic acid is contained in the bark of *Pinus Larix* L., and has been eliminated and examined by Stenhouse. Proc. Roy. Soc. xi. 405. Ann. Ch. Pharm. cxxiii. 191. Am. J. Pharm. xxxiv. 555.

Piperic acid has been studied by J. C. Foster. His analyses agree with those of Strecker. Nascent hydrogen forms a new acid, containing two more equivalents of H; to this the author has given the name of hydropiperic acid. J. Chem. Soc. xv. 17.

Abietinic acid, according to R. L. Maly, is the portion of the resin from *Pinus abies* L., which is insoluble in 80 p. c. alcohol, and for which he gives the formula $C_{44}H_{32}O_5$. Hydrochloric acid converts it into sylvinic and sylvinolic acids, the first of which is crystallisable. Ber. Wien. Akad. xliv. J. prakt. Ch. lxxxvi. p. 111.

Chrysophanic acid. The composition of this acid, as found by Rochleder and by Schlossberger, has been confirmed by Pilz. Ber. Wien. Akad. xliv. 493. J. prakt. Ch. lxxxiv. 436.

Salicylic acid and *kresotic acid* are formed, according to Kolbe and Lautemann, when a current of dry carbonic acid is passed through moderately heated phenylic alcohol with the addition of small pieces of sodium; for the latter acid cressylic alcohol is used; it gives the same purple-color with ferric chloride as salicylic acid. Ann. Ch. Pharm. cxv. 167. Arch. Pharm. clx. 156.

Picric acid. H. Hager describes the purification of commercial acid, and a method for its examination. Ph. C. H., 1863, No. 8. Am. D. Circ. vii.

Benzoic acid. Kolbe and Lautemann have eliminated from several kinds of benzoin by Scheele's process, a compound of 2 eq. of benzoic and 1 of cinnamic acid, with a fusing point at 94° C., 26 degrees below that of benzoic acid; the two acids are separated by crystallisation or fractional precipitation. The presence of cinnamic acid in the gum is found, by dissolving the acid prepared from it in some mineral acid, adding permanganate of potassa, which, if cinnamic acid be present, will evolve the odor of oil of bitter almonds. Ann. Ch. Pharm. cxix. 136. H. Aschoff has examined Sumatra gum, which contained solely cinnamic acid. Arch. Pharm. clvii. 153.

H. Kolbe finds that when a hot solution of benzoic acid in dilute hydrochloric acid is treated with sodium-amalgam, among other products, oil of bitter almonds is formed. Ann. Ch. Pharm. cxviii. 122.

Hippuric acid, according to Erlenmeyer, is by nascent hydrogen split into oil of bitter almonds and glycocol. Zeits. Ch. Pharm., 1861, p. 548.

Rob. Otto has published researches on derivatives from benzoic and hippuric acid, in Ann. Ch. Pharm. cxxii. 129. Compare Am. J. Ph. xxxv. 29.

Cinnamic acid. E. Kopp has examined a number of the salts of this acid. Compt. liii. 634. Rép. Ch. pure iv. 68. The baryta salt distilled with caustic baryta yields *cinnamene*, which Kopp considers to be identical with styrole.

Erlenmeyer and Alexejeff have found that cinnamic acid by treatment with sodium-amalgam, and afterwards with hydrochloric acid, yields a homologue of terebinthic acid, the fusing point being 45° C. Ann. Ch. Pharm. cxxi. 375. Ch. N. 142. Pharm. J. Trans. (2) iv. 319.

Guaiacum. According to Hlasiwetz and v. Gilm, guaiacic acid is obtained as follows: an alcoholic solution of the consistence of syrup (of 1 pound) guaiac is mixed with an alcoholic solution (of $\frac{1}{2}$ pound) of caustic potassa, and from the resulting magma the potassa-salt separated by pressing, and purified by recrystallisation from alcohol; it is then decomposed by HCl. Or, the powdered resin is boiled with water and half its weight of quick-lime, and after removing the liquor, the residue is dissolved in hot alcohol, the tincture evaporated to dryness, and the residue treated with caustic soda. The soda salt is crystallised from water, containing a small quantity of caustic soda. The cryst. acid has a faint odor of vanilla; it is pure when it remains unchanged in the air, and when the hydrochloric solution produces with ferric chloride not a blue, but a grass-green coloration, and when it shows no change with chlorine water, or with fuming NO_6H on mixing with water; the vanilla-odor is lost by repeated crystallisations. They adopt for guaiacic acid the formula $C_{40}H_{26}O_8$. It forms neutral and acid salts with the fixed alkalies. By dry distillation it yields *pyro-guaiacin*, $C_{38}H_{22}O_6$; the solution of this substance in SO_4H is at first yellow, but on heating passes through red, green, and purple, to deep blue, and on dilution with water a deep blue-colored powder is precipitated. The same effect is produced in the cold with SO_4H and MnO_2 or CrO_3. J. prakt. Ch. lxxxvi. 363. Arch. Pharm., Feb. 1863.

Hadelich did not succeed in obtaining more than 1 decigr. of Thierry's guaiacylic acid from 4 pounds of the resin. To obtain the yellow coloring matter, he evaporated to dryness Hlasiwetz's lime-liquor, exhausted the residue with water, and precipitated this solution with $\overline{A}$. After some weeks it has deposited some brownish crystals possessing an intense vanilla-odor, which contain N, but not in the form of ammonium; their solution in SO_4H is deep blue, and passes by absorption of water to yellow. The residue from the extraction of the lime-salt with alcohol in one of Hlasiwetz's processes, contains *guaiaconic-acid* and beta-resin; the former amounts to about 70 per cent. of the resin, the latter to 9 or 10 per cent. Neither of them appear to have been obtained in the pure state. J. prakt. Ch. lxxxvii. 321. Ch. C. B., 1863, p. 305.

Lactucic acid. See Lactucin.

Eugenic acid prepared from the oil of cloves by boiling with soda, according to H. Schenck, is mixed with salicylic acid. Like thymylic alcohol and its homologues it combines with carbonic acid in the presence of metallic sodium, and is converted into *Eugetinic acid,* $C_{22}H_{12}O_8$. Ann. Ch. Pharm. cxxv. 14.

CARBOHYDRATES, GLUCOSIDES, ETC.

Starch. The amylum of the potato, wheat, and arrow-root, immersed in water, has been carefully examined by Pohl, who finds them all of a stratified structure, which becomes apparent when they are moistened. The iodine which combines with starch, can be removed by washing, leaving it colorless. The intensity or purity of coloration is strongest with arrow-root. J. prakt. Ch. lxxxiii. 35. The degree of hygroscopy of various kinds of starch has been observed by Nossian (ib. p. 41); that of wheat is the least, that of the acorn the most hygroscopic; the absorption appears to take place in equivalent proportions, up to 4 eq. of water being combined.

According to H. Reinsch the soluble portion of starch which Delffs obtained by trituration, is more readily procurable by freezing starch-paste at the lowest temperature (—20° C.), and after thawing, diluting it with water, and filtering the perfectly clear solution. N. Jahrb. Ph. xviii. 337.

E. Lippmann has determined at what temperature the swelling and bursting of the cells, and the jellification of various kinds of starch take place. The first phenomenon begins soonest with that of barley, the two last with rye, and in all three that from acorn is the tardiest. J. prakt. Ch. lxxxiii. 51.

The opinion of Musculus, that the action of acids on starch is the same as that on a glucoside, viz.: a splitting into sugar and dextrine, is attacked by Payen, who adduces proof to show that there is no production of sugar without previous formation of dextrine (Compt. liii. 1217. Polyt. J. clxiv. 144); Musculus, however, still maintains, that sugar is only formed as long as starch is present, independently from the simultaneous presence of dextrine. Compt. liv. 104. Polyt. J. clxiv. 159.

For a paper on the distinction between the amylum of arrowroot and those of wheat and the potato, by J. F. Albers, from Arch. Pharm. clxiii. 210, compare A. D. Circ. vii.

Jacquelain describes the manufacture of starch from the horsechestnut in the establishment of Callias, at Nanterre, France. Bull. Soc. d'Enc., 1862, p. 66. Polyt. J. clxvi. 71.

Pyrodextrin is roasted starch, which A. Gélis proposes to employ for coloring liquors of various kinds. Cat. de l'Expos. de Londres.

The *xyloidin* of Uchatius (A. D. Circ.) has been further experimented on by Sauerwein. Polyt. J. clxiv. 123.

Pyroxylin. E. Divers has communicated researches on the spontaneous conversion of gun-cotton into pectic and parapectic acids. J. Ch. Soc. xvi. 91.

Gum-sugar. Streck has obtained an uncrystallisable sugar by treating gum arabic with dilute sulphuric acid; it reduces the cupric tartrate, but does not ferment. Arch. Pharm. clvii. 15.

J. A. Kaiser has examined the products of the dry distillation of sugar. N. Rep. xii. 4.

Caramel. A. Gélis, with reference to Graham's publication on dialysis, describes the preparation of colorless caramelan from starch-sugar, and of glucosan, distinguished from caramelan by passing again into sugar under the influence of water and acids. Ann. de Chim. Ph. (3) lxv. 496.

The sugar resulting from the splitting of salicin and amygdalin, according to O. Schmidt, possesses all the properties of pure glucose. Ann. Ch. Pharm. cxix. 92.

E. Linnemann has succeeded in converting cane-sugar, previously modified by means of acid, into mannite by means of sodium-amalgam. Ann. Ch. Pharm. cxxiii. 136.

Mannite distilled with concent. hydriodic acid, according to Erlenmeyer and Wanklyn, yields iodo-caproyl; they consider this sugar to be a hydride of caproyl (hexyl) in which 6 eq. of H are replaced by as many eq. of binoxyd of hydrogen. Zeits. Ch. Pharm., 1861, 606. Ann. de Chim. Ph. (3) lxv. 364.

Nitromannite and mannitan, according to Loir, are dextrogyre; of the various kinds of mannite examined, which were all optically inactive, none yielded a lævogyre derivative. Bull. Soc. Chim., Dec. 1862, 113. Ch. C. B., 1863, 159.

Melampyrite is found by L. Gilmer to be identical with dulcite. Ann. Ch. Pharm. cxxiii. 372. Am. J. Pharm. xxxv.

Erlenmeyer and Wanklyn have shown that, like mannite, by distillation with hydriodic acid, it yields iodo-caproyl, and is therefore an alcohol of the same kind as mannite. J. Ch. Soc. xv. 456.

Erythrite distilled with hydriodic acid, according to De Luynes, yields iodo-butyl (Compt. lv. 624; Ann. Ch. Pharm. cxxv. 252), which Erlenmeyer and Wanklyn consider doubtful. J. Ch. Soc. xv. 461.

Thènard has studied the action of ammonia, heated in sealed tubes, on cane-sugar, glucose, lactose, and mannite. They all form a nitrogenous, insoluble humic substance, a bitter matter soluble in water, alcohol, acids and alkalies, and two more nitrogenous bodies soluble in acids. Compt. lii. 444. Similar results have been recorded by Schuetzenberger. Bull. Soc. Chim. 1861, 16, and before by Dusart, Compt. lii. 702.

Lactose. Barth and Hlasiwetz have formed a new acid by the action of bromine on sugar of milk. Its empirical formula is $C_{12}H_{10}O_{12}$; its ammonia salt forms a mirror with silver solution, and reduces the alkaline solution of copper; it is not precipitated by $PbO\,\overline{A}$, $2PbO\,\overline{A}$, $HgO\,NO_5$, BaO, CaO, but by $PbO\,\overline{A}$ on the addition of ammonia; it dissolves cupric oxyd with excess of alkali. J. prakt. Ch. lxxxvii. p. 257.

Phloroglucin, the sugar obtained by the splitting of phlorrhizin, has been examined to some extent by Schmidt and Hesse. Ann. Ch. Pharm. cxix. 92, 103.

Hlasiwetz and Pfaundler have published some researches on phloretin, the secondary carbohydrate of phlorrhizin, and on phloroglucin. The latter is convertible into an alkaloid, and this into an acid closely resembling Wittstein's tyrosin-sulphuric acid obtained from rhatany. Ibidem, p. 199.

Sorbin, according to Dessaignes, is by nitric acid converted into racemic, tartaric, *meso-tartaric,* (isomeric with racemic), and *aposorbinic acids.* Bull. Soc. Chim. 1862, Dec. p. 102. Ch. C. B. 1863, p. 337.

Populin, T. L. Phipson announces that this substance is formed in crystals on evaporating an alcoholic solution of benzoic acid and salicin. Ch. N. 157.

Saponin. Theo. Martius gives a compilation of the plants in which this substance has been found. N. Rep. xi. 337. A. D. Circ. vii.

Fr. Rochleder publishes his researches on saponin, for which he establishes the formula $C_{128}H_{106}O_{71}$; dried *in vacuo* $C_{128}H_{105}O_{71}$; the final product of the splitting by acids, *sapogenin,* is composed according to $C_{56}H_{42}O_{8}$. Wien. Ak. Ber. xlv. N. Rep. xi. 376.

Caïncin, (caïncic acid), according to the same author, has the formula $C_{120}H_{91}O_{53}$; it yields with acids *caïncetin,* $C_{60}H_{46}O^{8}$. Chiococcaic acid is only an intermediate product. Caïncetin is acted on by caustic potassa with formation of butyric acid and probably kinovic acid. *Ibidem.*

For the glucosides of Aesculus Hipp. vide Mat. Medica.

Asparagin. According to H. Kolbe, asparaginic acid is a derivative of succinic acid, amido-succinic acid, or succinic acid in which 1H is replaced by amid, and asparagin is amido-succinamic acid, i. e. amido-succinic acid, in which 2O outside of the radical, are replaced by amid (H_2N). Ann. Ch. Pharm. cxxi. 232.

Cholesterin is no longer to be considered as peculiar to the animal organism alone. Its occurrence in vegetables is established by Beneke (Ann. Ch. Pharm. cxxii. 355. A. D. Circ. vii. 10) and by Ritthausen (J. prakt. Ch. lxxx.) A. D. Circ. vii. 75.

COLORING MATTERS.

Chlorophyll. Ludwig and Kromayer confirm the observations of Fremy, and give to phyllocyanin the formula $C_{34}H_{68}N_2O_{17}$. Arch. Pharm. clvi. 164. A. D. Circ. vi. 181.

Luteolin, according to Schützenberger and Paraf, has the formula $C_{24}H_{10}O_{12}+HO$; when dried at 150° C., it loses 3 eq. of water. Ann. Ch. Pharm. Suppl. i. 139. Ch. C. B., 1861, p. 271.

Quercitrin. Zwenger and Dronke confirm the results obtained by Bolley and by Rigaud as to the properties of this substance. It is readily prepared from the extract made of quercitron bark with boiling alcohol, by evaporation and purification of the acetic solution by sugar of lead; the filtrate, after removal of the excess of lead, furnishes quercitrin in granular crystals. Its formula is $C_{36}H_8O_{20}+6HO$; three of the latter are removed by drying at 100° C.; the other three by heating to near the fusing point, which is 168° C. Ann. Ch. Pharm. Suppl. i. 257.

Robinin. The same chemists (*ibidem*) describe robinin, the yellow coloring matter of the flowers of Robinia pseudo-acacia; its composition is expressed by the formula $C_{50}H_{30}O_{32}$; among the products of its dry distillation is quercitrin. The sugar produced by splitting with acids differs from that yielded by quercitrin by giving principally picric acid with nitric acid, and containing 3HO less. They suspect the identity or relationship of the glucosides obtained from Ruta graveolens, Capparis spinosa, Rhamnus tinctoria, Sophora Japonica, Thuja occidentalis, Æsculus hippocastanum. The formula of *Rutin* and the above two stand in the following relation:

$$\begin{aligned}\text{Quercitrin} &= C_{12}H_8O_8 + C_{26}H_{10}O_{12} + 6HO.\\ \text{Rutin} &= {}^2(C_{12}H_9O_9) + C_{26}H_{10}O_{12} + 5HO.\\ \text{Robinin} &= {}^2(C_{12}H_{10}O_{10}) + C_{26}H_{10}O_{12} + 11HO.\end{aligned}$$

The sugar from rutin yields oxalic acid by treatment with nitric acid, and is crystallisable. Rutin is precipitated by acetate of lead, but does not reduce cupric oxyd, while with robinin the contrary takes place. Crude rutin (from Ruta graveolens) contains a substance resembling coumarin, with a fusing point above 100° C. Ann. Ch. Pharm. cxxiii. 145. Arch. Pharm. clxiii. 247.

W. Stein gives different formulas for quercitrin and rutin. He found it in the flowers of Leucojum vernum, Acer pseudo-platanus, Cornus mascula, and in the epidermis of Agaricus ochraceus. He proposes for rutin the name *melin*, (from μήλινος, quince-color,) for quercitrin, *quercimelin.* The coloring-matter of straw and Æthalium flavum he considers to be identical with quercitrin.

Schlieper's carthamin is uncrystallisable rutin; morindin has the same composition with quercitrin; the red crystalline sublimate, morindon, which it yields on heating, (supposed by Roch leder to be identical with alizarin, though this does not agree with the analysis by Anderson,) has the composition of gentianin. Melletin-quercetin,—an alcoholic solution of rutin, —yields with sodium-amalgam a red color, which turns green with alkalies, the red color being restored by acids; this is *paracarthamin.* ($C_{55\cdot2}H_{5\cdot867}$ p. c.) Arch. Pharm. clxii. 97. Ch. C. B. 1862, p. 369.

Delffs doubts the existence of Wagner's morin-tannic acid in Morus tinctoria,—Zeit. Ch. Pharm. 1862, p. 143,—which is, however, insisted on by R. Wagner. Ch. C. B. 1862, p. 399.

Hlasiwetz, together with Pfaundler and v. Gilm, continue their researches on quercitrin, etc. They state that the crystalline deposite from a decoction of Morus tinctoria, when in alkaline solution and in contact with sodium amalgam, produces phloroglucin, together with another coloring matter. Quercetin, treated simultaneously with fused caustic alkali and nascent hydrogen, does not furnish quercetric acid, as formerly stated, but a colorless substance, and differing from Stein's paracarthamin. Ann. Ch. Pharm. cxxiv. 358.

ALKALOIDS AND THEIR COMBINATIONS.

Ammonium derivatives. C. Rammelsberg publishes researches on the crystalline structure of ammonium—and phosphonium—bases. Arch. Pharm. clxi. 193.

Methylamina is produced, according to P. Mendius, by the action of nascent hydrogen (zinc + acid) on hydrocyanic acid. Ann. Ch. Pharm. cxxi. 139.

Propylamina. Cyanide of ethyl in alcoholic solution treated with nascent hydrogen, according to the same chemist, yields propylamina proper. A number of the compounds of this base are described. *Ibidem,* p. 133.

Anilin derivatives. The chemistry of the colored derivatives of aniline has at last been explained, to some extent, by A. W. Hofmann. The red color is a salt of a colorless ternary alkaloid,—*rosanilina*,—which, with deoxydising agents, yields another colorless alkaloid,—*leucanilina ;* another product of the action of oxydising agents on anilina is a yellow alkaloid,—*chrysanilina.* Compt. liv. 428. J. prakt. Ch. lxxxvii. 226. Pharm. J. Trans. Am. J. Ph. xxxv. 342. Am. D. Circ.

E. Kopp communicates researches on *tannate of rosanilina.* Rép. Ch. appl. 1862, p. 257. Polyt. J. clxv. 382. Ch. N. 162.

[It should be noted that these artificial bases bear a great resemblance to the colored alkaloids of the Papaveraceæ.]

The vapor of anilina passed through a red-hot glass tube, according to A. W. Hofmann, yields, among other products of decomposition, benzole and cyanide of phenyl, which, by boiling with potassa, is converted into ammonia and benzoic acid. Compt. lv. p. 805. Ch. C. B. 1863, p. 157.

Coridina, *rubidina*, and *viridina*, ternary bases contained in coal-tar and possessing a boiling point and density higher than that of parvolina, have been eliminated by G. Thenius. Ch. C. B. 1862, p. 53.

Conia. Schwarzenbach states that the chlorine in the precipitate which conia gives with mercuric chloride is not sufficient for Blyth's formula $Co^{+} + 4HgCl$; the precipitate loses mercuric chloride by washing. Viert. Ph. xi. 29.

According to the same chemist, aldehyde forms with conia an oily substance, probably analogous to aldehyd-ammonia, but not crystalline, and of the odor of hydride of salicyl. Viert. Ph. xi. 30.

Th. Wertheim gives contributions to the chemistry of conia. The boiling point is at 163·5° C. Nitrous acid forms an oily substance, — *azo-conydria*, — $C_{16}H_{16}N_2\,O_2$; which, by treatment with anhydrous phosphoric acid, yields a carbohydride,—*conylene*,—$C_{16}H_{14}$. Ann. Ch. Pharm. cxxiii. 157.

O. Barth obtained 5½ drachms of the alkaloid from 5 pounds of conium fruit. Arch. Ph. clxiii. 15. L. F. Bley gives the history and some of the properties of conia. *Ibidem*, clxiv. 97.

Sparteïna. E. J. Mills has examined Stenhouse's sparteïna, and has doubled its formula so as to make it $C_{30}H_{26}N_2$, a homologue of nicotina. J. Ch. Soc. xv. 1. Ann. Ch. Pharm. cxxv. 71.

Digitalina. See *Scrophulariaceæ.* MAT. MEDICA.

Mercurialina. See *Euphorbiaceæ.* MAT. MEDICA.

Caffeïna. A. Strecker finds that when caffeïna is boiled with caustic baryta, ammonia and methylamina are evolved, some carbonate of baryta is formed, and the filtrate from the latter contains a new base, caffeïdina, $C_{14}H_{12}N_4\,O_2$, which forms a double chloride with cadmium, but not with platinum. Ann. Ch. Pharm. cxxiii. 360. Am. J. Ph. xxxv. 34.

According to H. Hager, caffeïna does not form a salt with citric acid, and the substance employed as citrate is the pure alkaloid. Pharm. C. H. 1863, p. 853.

Quinia. Jobst and Hesse show that the neutral (ordinary) sulphate has the formula $2(C_{40}H_{24}N_2\,O_4,\ SO_3\,HO) + 15\ HO$. Ann. Ch. Pharm. cxix. 361. A. D. Circ. vii. 22.

According to Millon and Commaille, the neutral sulphate may absorb as much as 29 p. c. of water without material change in its appearance. Rép. Ch. appl. Pharm. J. Tr. (2), iv. 317. Am. J. Ph. xxxv. 153.

From an alcoholic solution of oil of anise and quinia (5 parts), according to O. Hesse, a crystalline compound is obtained of the formula $2(C_{40}H_{24}N_2\,O_4),\ C_{20}H_{12}O_2 + 4HO$. Ann. Ch. Pharm. cxxiii. 382. Am. J. Ph. xxxv. 57.

H. Strecker finds that when cinchonia is converted into monobromo-cinchonia, and then boiled with alkali, a base is obtained which is isomerous with quinia, but differs from it in many properties. Ann. Ch. Pharm. cxxiii. 379.

Cinchonia. O. Hesse publishes researches on cinchonia, with which he believes Schwabe's beta-cinchonia to be identical. Ann. Ch. Pharm. cxxii. 226. Am. J. Ph. xxxv. 34.

Narcotina. Matthieson and Foster find for this alkaloid the constant formula $C_{44}H_{23}NO_{14}$. Distilled with conc. hydriodic acid it yields nearly 3 equiv. of methyl. Ann. Ch. Pharm. i. Suppl. 330.

Th. Anderson gives some remarks on the constituents of opium and the extraction of the bases from the first mother-liquor in Robertson and Gregory's process. J. Ch. Soc. xv. 446. Am. J. Ph. xxxv. 519.

Strychnia. E. Ménétriès has examined the action of bromide of ethylene on this alkaloid. Ch. C. B. 1862, p. 145.

Arseniate of strychnia is prepared, according to Chiappero, by heating in 40 parts of water 3·34 parts of strychnia and 1·15 of arsenic acid. It crystallises in oblique prisms, soluble in 15 parts of cold water, and has the formula $C_{42}H_{22}N_2O_4$, AsO_5+5HO. Cannst. Jahr. 1861, p. 152.

Subarseniate of strychnia, the same author obtains from the same quantity of acid with 6·6 parts of strychnia in 50 of water. It forms acicular crystals, soluble in 40 parts of water, and its composition is expressed by $2(C_{42}H_{22}N_2O_4)\ AsO_5+6HO$.

Arsenite of strychnia he prepares by dissolving 12·38 parts of powdered arsenious acid in 800 of water and 10 of hydrochloric acid (sp. gr. 1·18), and afterwards adding 41·95 parts of strychnia. The salts crystallises in square prisms and is soluble in 100 parts of cold water.

Subarsenite of strychnia is obtained from the hydrochloric solution of 19·8 parts of arsenious acid and 33·4 of strychnia, and is somewhat less soluble in water. *Ibidem.* The last two named compounds contain chlorine in some shape.

Arseniate of strychnia and morphia is prepared by dissolving in 40 parts of water 3·04 of morphia, 3·34 of strychnia and 1·15 of arsenic acid. It forms prismatic crystals soluble in 12 parts of cold water. *Ibidem.*

Brucia. L. Schad has made experiments with bromide of ethylene on brucia. Ann. Ch. Pharm. cxviii. 207.

Atropia. According to J. Gulielmo, when 1-10th or 1-20th of a grain of this alkaloid is heated with a few drops of conc. sulphuric acid, the solution turns brown, and evolves an odor between that of orange flowers and those of Prunus spinosa. Viert. Pharm. xii. 220.

H. Hager doubts the practicability or cheapness of W. Procter's method for the preparation of atropia, without giving his reasons. The process of the new Hanoverian Pharmacopœia is, to express the fresh root, boil the clarified juice to coagulate albumen, and after straining, and adding lime until of an alkaline reaction, to shake twice with 1 p. chloroform for every 100 of the juice. The residue from the evaporation of the chloroform is dissolved in alcohol and treated with animal charcoal. Hager recommends to macerate the juice with oxyd of lead, and an addition of hydrochloric acid to the water used to exhaust the roots by pressure; he also states that the alkaloid in the free state is absorbed to some extent by the charcoal; the spontaneous evaporation of a solution of its salts is best performed over oil of vitriol. Pharm. C. H. 1863, p. 679.

Sulphate of atropia, according to J. Laneau, is best prepared by adding a solution of sulphuric acid in anhydrous alcohol to that of the exact quantity of alkaloid dissolved in the same kind of alcohol. Rép. Ph. xix. 455. Am. J. Ph. xxxv. 315. H. Hager recommends, for the purification of impure (amorphous) sulphate, to recrystallise it from absolute alcohol. Pharm. C. H. 1863, p. 840. A. D. Circ. vii.

Emetina. Böhnke-Reich has analysed this alkaloid. It loses 2·4 per cent. of HO at 100° C. and then has the formula $C_{20}H_{15}NO_5$; when doubled this would make quinia $+6HO$. Arch. Pharm. clxiii. 193.

Hydrastia. F. Mahla gives the composition of Durand's hydrastia, which is 65·33 per cent. C., 6·03 H., 3·517 N or $C_{44}H_{24}NO_{12}$. The hydrochlorate contains 8·34 per cent. of hydrochloric acid. Am. J. Sc. xxxvi. 114.

Berberina. According to J. D. Perrins, the formula of this alkaloid must be $C_{40}H_{17}NO^8$, which is likewise found by Hlasiwetz. Perrins also describes a number of the salts of this alkaloid. As a characteristic test he mentions a crystalline compound resembling herapathite in most of its properties, which is formed by adding a dilute solution of iodine, in an iodide to an alcoholic liquid containing even small traces of berberina. J. Ch. Soc. xv. 339. Ph. J. Tr. (2) iv. 464.

Hydroberberina. Hlasiwetz (and v. Gilm) had given notice in Ann. Ch. Pharm. cxxii. p. 256, that they had obtained a colorless alkaloid by the action of nascent hydrogen on berberina. In Ann. Ch. Pharm. Suppl. ii. 191, they give the same formula for berberina as established by Perrins, and the mode of preparation and the properties of the new alkaloid *hydroberberina*, produced from a mixture of 6 parts of berberina, 100 of water, 10 of oil of vitriol, and 20 of glacial acetic acid, with granulated zinc (and some platinum foil) heated in a flask connected with a condenser. It forms granular or acicular crystals without color or with a slight yellow tinge, belonging to the oblique rhombic system, has a composition according to the formula $C_{40}H_{21}NO_8$, which is berberina,+4H. Most of the salts crystallise very readily; by oxydising agents it is reconverted into berberina.

Solanina. Zwenger and Kind had previously (Ann. Ch. Pharm. cxviii. 129) noticed, that besides the formation of solanidina by dilute acids, concentrated acids produce further products of dissociation; two bases, one of which only, *solanicina*, is procurable in a pure state, and has the formula $C_{50}H_{39}NO$, an amorphous or rarely crystalline substance difficultly soluble in alcohol, ether, and water, but forming readily soluble salts. Ann. Ch. Pharm. cxxiii. 341.

A. Kromayer shows that not only by the heat employed in Reuling's process, but even by maceration of the potato-sprouts at the ordinary temperature in dilute sulphuric acid, a considerable portion of the alkaloid is converted into solanidina. The two alkaloids are distinguishable by the ready solubility of solanidina in ether, and by its forming a precipitate with iodine-water. Arch. Pharm. clxiv. 113.

VEGETABLE AND AGRICULTURAL CHEMISTRY.

Ozone in plants. Kosmann has published some researches on the presence or development of ozone from vegetables, of which a resumé is given in Rép. Pharm. xix. 236. A. D. Circ. vii.

Nitrogen in the soil. J. Pierre has determined the quantity of nitrogen in different strata of the same soils; it appears to decrease in descending from the surface; but its source has escaped discovery. Ann. de Chim. Ph. (3) lix. 63. Arch Ph. clxiii. 129.

Lawes, Gilbert and Pugh, in a paper read before the Chemical Society, give their views on the assimilation and source of nitrogen in plants, in which they draw comparisons between the degrees of absorption by leguminous and graminaceous plants; the former assimilate double the amount of that absorbed by plants of the latter family, and literally exhaust the soil, without deriving much benefit from manures. They conclude, from their experiments, that free nitrogen is not absorbed or assimilated. J. Ch. Soc. xvi. 100. Ch. N. 171.

The production of mucideneæ with nitrogenous constituents in sealed tubes containing sugar, glycerin, tartaric acid and phosphates, and an atmosphere of oxygen and nitrogen, which was observed by Jodin, may be accounted for, according to Nicklès, by the previous formation of ammonia. J. de Ph. xlii. 439.

H. Gronven proposes to absorb the ammonia in the atmosphere of stables by suspending from the ceiling boards spread over with humous earth saturated with hydrochloric acid. Polyt. J. clxv. 320.

Boussingault has shown that the portion of the gases exhaled by plants under the influence of light, which has been assumed to be nitrogen, is in fact a mixture of carbonic oxyd and a hydride of carbon. Ann. Sc. Nat. 1862. Am. J. Sc. xxxv. 121. A. D. Circ. vii. 38. The conclusions which may be drawn from this statement must be reserved until it is proved, whether these compounds of carbon are not secretions of the plants formed independently from the process of assimilation, as remarked by A. Gray, [by decomposition of proximate principles].

Silica. From the researches of Wicke on the occurrence of silica in the higher plants, it appears that in most instances the durability and rigidity of the fibre or parts depends on its presence; this is, however, not uniformly the case, since in some instances, as has been shown by Arendt in the case of the oat, the upper part of stem and leaves contain a larger proportion than the lower parts, so that its occurrence or deposition cannot be governed by uniform laws. J. prakt. Ch. lxxxiv. Am. J. Sc. xxxv. 124.

Copper in plants. A. Commaille insists on the presence of this metal as a normal constitutent of many plants, having noticed its existence in the ashes of a large number. J. de Ph. xliii. p. 184.

Absorption of poisons. Daubeny has continued his experiments on vegetables as to the absorption or rejection of arsenic, strontia and baryta, which were introduced in the soil before the seed was sown. There appeared to be no marked difference compared with soils which contained none of those substances; the plants raised contained not even traces of them. J. Ch. Soc. xv. 16.

Vegetation. We can here only refer to the researches of F. Stohmann on the development of plants in watery solutions of the constituents of their ashes, (Ch. C. B. 1861, p. 593), and on the absorption of alkalies by the soil, (Ann. Ch. Pharm. cxxi. 285); by W. Knop, on the same subject (Ch. C. B. 1861, p. 465, 481, 561, 577, 601, 955, *ibidem*, 1863, p. 209); by F. Rautenberg, on the dependence of the soil on its constituents for the capacity of absorption, (Ch. C. B. 1863, p. 129); by Nobbe and Siegert on chlorine as a specific nutriment of the buckwheat plant; by Salm-Horstmar on the necessity of fluorine for the fructification of the oat, (J. prakt. Ch. lxxxiv. 140). Other authorities to be referred to are J. v. Liebig, (see Literature; also Am. D. Circ. vii.); S. W. Johnson, (Am. J. Sc. and Ch. N.); also Ch. N. 182 and foll.; Ubaldini (J. de Ph. xli. 490), etc.

Germination. M. Schulz reviews some points of its history and communicates interesting experiments on the germination of some phanerogamous plants. J. prakt. Ch. lxxxvii. 129.

Anilina is stated by T. L. Phipson to be the coloring principle of certain fungi, such as Boletus luridus, B. cyanescens, etc., the coloration being due to the action of ozone. Ch. N. 151. Am. J. Ph. xxxv. p. 59.

Colors of flowers and leaves. E. Filhol believes that the decolorization of medicinal leaves and flowers is coëtaneous with certain changes of their proximate principles. J. de Pharm. xli. p. 451. Ph. J. Trans. (2) iv. 132.

Gluten of wheat. Ritthausen publishes researches on this material for which we must mainly refer to J. prakt. Ch. lxxxv. 193. To be noticed is the solubility of vegetable caseïn and gelatin (gliadin) in alcohol. Spirit of 50 per cent. dissolves both in the heat, and caseïn more readily than alcohol of 75 or 80 per cent.; gluten swells considerably in 50 per cent. alcohol. Vegetable gelatine is completely soluble in cold alcohol of 80 per cent. Mucin or caseïn, Ritthausen considers to be a compound or mixture of gelatin and dextrin; it is entirely insoluble in cold or hot water, but soluble in acetic acid, while prolonged contact with water also removes the solubility in the latter.

Gunsberg believes with Taddei, that the caseïn of gluten is a mixture of gelatin and particles of gluten ; he considers the latter to consist of fibrin (insoluble in alcohol or boiling water), caseïn, (soluble in alcohol, insoluble in boiling water), and gelatin, (soluble in both). J. prakt. Ch. lxxxv. 213. For further remarks by Ritthausen compare J. prakt. Ch. lxxxvi. p. 257.

Vegetable gelatin is obtained pure by Ritthausen on allowing the alcohol solution to vaporise in flat dishes over sulphuric acid; it closely resembles animal glue. Strong HCl, NO_5, $\overline{A}$ and $\overline{T}$ form clear solutions, PO_5 only slowly; fixed alkalies dissolve it without decomposition in the cold. J. prakt. Ch. lxxxviii. 141.

Gum and Albumen. R. Gunsberg endeavored to find whether all dextrin gum disappears during fermentation, and to throw light on the previous statements of Balling and Musculus. He sought to determine the quantity of gum in solution by means of alcohol, the reverse of the method given by him for determining the amount of alcohol in saccharine fluids (see Analy. Ch.), but met with great irregularities, in investigating which he found that, in an acidulous solution of gluten, gum produces a precipitate insoluble either in acid or in more gum, and that the same phenomenon is produced by gum in solutions of albumen. There is, however, a distinction between dextrin-gum and arabin in this respect. Albumen, he finds, dissolves not only in organic, but also in all dilute mineral acids; up to a certain proportion this solution is precipitated, as stated, by dextrin-gum, and the precipitate is insoluble in either of the precipitants, while the slightest excess of arabin redissolves the precipitate it produces, but it is again thrown down on boiling. J. prakt. Ch. lxxxviii. 237.

Fermentation. C. Schmidt proves that he was the first (in 1847) to notice the formation of succinic acid in the fermentation of sugars. Handw. der Chemie iii. 224. Ann. Ch. Pharm. cxxvi. 126. He also showed that there is an *increase* in weight of the fermenting cells of from 50 to 60 per cent.

J. J. Pohl gives remarks on the process of fermentation; he concludes that Fehling's solution is not applicable for the purpose of determining the sugar in wine; that the sweet taste after the second stage is produced principally by glycerin; there is no tertiary fermentation. Polyt. J. clxiv. 134. Rép. Ph. xix. 360.

We can here refer only to the researches of Pasteur on fermentation, generatio æquivoca, etc., which have been published for several years past in Compt. rend; also J. prakt. Ch. lxxxv. 465. Polyt. J. clxv. 292, 299, and Am. J. Sc. Experiments on the formation of infusoria in boiled solution enclosed in tubes are communicated by J. Wyman. Am. J. Sc. (2) xxxiv. 79.

Fat in seeds. Dragendorff percolates them with benzol; this permits also to determine afterwards the soluble albuminates. Ph. Zeits. Russl. Ph. C. H., 1863, p. 13.

Starch in seeds. The same chemist gives a method for determining the starch; the seeds are digested for some time in a 6 per cent. solution of caustic potassa in absolute alcohol, at the temperature of boiling water; this renders all albuminoid, saccharine, etc., matter readily soluble in water, likewise the mineral salts, while the starch granules are not affected. The magma is washed, then boiled with dil. hydrochloric acid, the insoluble lignin, etc., being left undissolved; or the washed granules are digested with extract of malt. Ph. Zeits. Russl. Ch. N. 165. Am. J. Sc. (2) xxxv. 116.

Fertilisers. For a paper on their analysis, compare J. de Ph. xlii. 21.

ANALYTICAL CHEMISTRY.

INORGANIC SUBSTANCES.

Water. P. B. Wilson shows that Clark's soap-test becomes more accurate when the water or the lime solution is mixed with some carbonate of soda. The lime solution is 1 part $CaO\ SO_3$ in 2543 p. of water, which corresponds with Clark's solution of chloride of calcium; the soap test liquor contains 30 grms. soda soap in 3 litres alcohol of 90° Tr., of which, before testing, 200 grms. are mixed with 150 grms. of water and then with 130 grms. of alcohol of 56° Fr. This solution is titred so that 32 c. c. produce the froth with 100 c. c. of the lime liquor (=16 degrees hardness) previously mixed with 4 c. c. of a cold saturated solution of carbonate of soda. Polyt. J. clxiii. p. 370.

E. Nicholson states that the carbonates of magnesia and lime are separated by the re-solution of the precipitated magnesian salt in cooling. He determines the quantity of lime by a test-method with oxalic acid and permanganate, sulphuric acid with nitrate of baryta, [1·3 grms. per litre]; and permanganate for iron and organic impurities. The hardness is to be determined by a modification of Clark's test, potash soap of the London pharmacopœia being substituted for the soda soap. J. Ch. Soc. xv. 468. Ch. N. 154. B. H. Paul points out some fallacies in this method, especially as to the inapplicability of nitrate of baryta for the determination of sulphuric acid and solubility of carbonate of lime, (Compare *Calcium, Inorganic Chemistry*), Ch. N. 167 and 176. C. H. Wood likewise prefers potash-soap, but prepares it by double decomposition from lead plaster and carbonate of potassa. Pharm. J. Tr. (2) iv. 386.

Dr. Wood also recommends a permanganic solution (1 grm. $KO\ Mn_2O_7$ pr. Litre) for determining organic impurities in waters. J. Ch. Soc. (2). i. 62.

Nitric acid. F. Mohr determines the nitric acid of saltpetre approximately with a solution of ferrous sulphate (200 c. c.) and conc. sulphuric acid (100 c. c.) pr. litre, which is added to the solution of 1 grm. of saltpetre in 100 c. c. sulph. acid (1 p. to 9 of water) in a porcelain dish until the brown color is permanent. Polyt. J. clx. 219. Lehrb. d. Titr. 2d edition.

According to Fresenius, the method of Braun (Proc. 1862, p. 179) becomes more accurate, when the quantity of ferric chloride is measured by stannous chloride. Zeits. An. Ch. i. 32. Schlœsing's method gives accurate results; not so those of Ville and the above of F. Mohr. Those of Persoz and Reich (Proc. 1862, p. 179) are recommended by Fresenius, (Zeits. An. Ch. i. 180), H. Rose (Ann. Phys. Ch. cxvi. 635, Zeits. An. Ch. ii. 76. Ch. N. 174 and 177), and Wittstein, (Viert. Ph. xii. 284.)

S. W. Johnson reviews the various methods for the determination of nitric acid founded on its conversion into ammonia, among others, those of Schulze, (Proc. 1862, p. 179), A. V. Harcourt, (J. Ch. Soc. xv. 385, Ph. J. Trans. (2) iv. 314, Zeits An. Ch. ii. 14), Siewert (Ann. Ch. Pharm. cxxv. 293) in Am. J. Sc. (2) xxxvi. 116.

The most delicate reagent for nitric acid, according to J. Erdmann, is morphia used in the manner indicated in his method for distinguishing alkaloids. Ann. Ch. Pharm. cxx. 194. R. Kersting awards the same delicacy to brucia. Ann. Ch. Pharm. cxxv. 254. A. D. Circ. vii. 78; [this has before been recommended by Berthemot].

Carbonic acid in the gaseous form as evolved from carbonates or oxalic acid, is determined by H. Kolbe with Liebig's potash-tube. Ann. Ch. Pharm. cxix. 129.

M. Pettenkofer gives a method for measuring the carbonic acid of respired and other air by passing it through lime water titred with oxalic acid; the lime he has since replaced by baryta water. Polyt. J. clxiii. 53. A. D. Circ. vi.

As is noticed under *Calcium* (Chemistry) the carbonate formed by lime water remains partly in solution and increases the alkaline indication, until it becomes crystalline. Another error in the determination of carbonic acid in waters arises from the presence of alkaline salts, which, as oxalates, possess an alkaline reaction; the same is the case with magnesia. To prevent the interference of the alkalies, a solution of neutral chloride of calcium is added, and for that of magnesia, some salt of ammonia, as the chloride. In the latter case the passage of the carbonate of lime into the crystalline state should not be accelerated by heat. Polyt. J. clxv. 118

To prevent the escape of fumes of hydrochloric acid in analysing carbonates, F. Stolba attaches to Mohr's apparatus a tube filled, instead of chloride of calcium, with pumice stone which has been saturated with cupric sulphate and desiccated by heat. Polyt. J. clxiv. 128.

According to Fresenius, the bulky precipitate of carbonate from a mixture of chloride of ammonium and of calcium or baryum, must not be heated to the boiling point, as this would cause a loss of carbonic acid, owing to the action of the carbonates on the chloride of ammonium. The precipitate is to be filtered cold and washed with ammoniacal water, and before being measured with acid, kept slowly boiling for some time. He describes an apparatus combining the methods of H. Kolbe,

(v. above), G. J. Mulder (Zeits. An. Ch. i. 2) and Stolba, (v. above) Zeits. An. Ch. ii. 39.

Carbon in cast-iron, according to G. Lippert, is preferably determined by W. Weyl's process, solution of the iron in hydrochloric acid with the aid of a galvanic current, and combustion by Mülder's method. Zeits. An. Ch. ii. 39.

Boracic acid. Bolley has before called attention to the fact that borax, on being boiled with an excess of chloride of ammonium, produces boracic acid, chloride of sodium, ammonia and water. K. Kraut employs this reaction to determine the amount of boracic acid in salts and minerals from the ammonia evolved. Arch. Ph. clxi. p. 100. Zeits. An. Ch. ii. 73.

Sulphur in soda-ash and other alkalies is determined by H. Lestelle, by adding to the hot solution some ammonia and an ammoniacal solution of silver as long as the same causes a precipitate. (Ann. de Chim. Phys. (3) lxvi. 172. Ch. N. 160.) Fresenius (Zeits. An. Ch. ii. 94), approves of this method against the remarks of Kynaston. (Ch. N. 161.)

Letheby describes an apparatus for ascertaining the amount of sulphur in coal gas, by burning it in an atmosphere of ammonia, when the sulphur is oxydised and forms a salt with some of the ammonia. Ch. N. 167.

Sulphuric acid is approximately measured, according to Wildenstein, by a residual method, based on precipitating with chloride of barium, and afterwards ascertaining the excess of barium with a solution of chromate of potassa. Zeits. An. Ch. i. 327. Ch. C. B. 1863, p. 223.

Phosphorus. L. Hofmann believes that the purple coloration of a solution containing sulphide of ammonium, with ferric chloride, is due to the presence of phosphorus. Ann. Chem. Pharm. cxxv. 121. Ch. N. 147. Zeits. An. Ch. ii. 112. H. Huppert (Ann. cxxvi. p. 252), and J. Specht (ib. p. 273), prove this to be erroneous.

[It seems to have escaped notice that not only sulphides, but also hyposulphites, produce a purple color with ferric chloride. See a note by C. L. Bloxam in Ch. N. January 21, 1860.]

E. Mulder recommends a combination of Mitscherlich's and of Lipowitz's methods for the detection of phosphorus. Cannst. Jahr. 1862. Zeits. An. Ch. ii. 109.

Phosphoric acid, together with all the iron, is precipitated, according to Al. Mueller, by adding to the acid solution of earths, etc., the acetate of an alkali, or, eventually, of iron, and boiling; the precipitate contains all the phosphoric acid and iron, together with some alumina, if present. J. prakt. Ch. lxxxii. 55.

The process of Chancel (vide Proc. 1862, p. 181), has been shown by A. McCurdy to be inaccurate, when ferric, aluminic, chromic, or uranic oxyds are present. Am. J. Sc. (2) xxxi. 281. The quantity of phosphoric acid may be determined by the amount of ammonia evolved on boiling the ammonia-phosphate of magnesia with excess of salammoniac. K. Kraut. Arch. Ph. clxi. p. 100. Zeits. An. Ch. ii. 74.

Chlorine, in more readily decomposable compounds, is determined by Kekulé from the chloride of sodium formed by leaving them in contact for some days with water and sodium-amalgam. L. Carius heats the compounds in sealed tubes with nitric acid and nitrate of silver. N. Jahrb. Ph. xvi. 283. Am. J. Ph. xxxiv. 332.

Hypochlorite of lime. Fresenius does not consider Davy's method (Proc. 1862, p. 181) for measuring the available chlorine preferable to Haen's, with permanganate as a final re-agent. Zeits. An. Ch. ii. 93.

Iodine. Starch should be prepared for testing, according to Bechamp, by boiling it with water to paste, and then liquifying it by uninterrupted boiling with 1-10th of the weight of starch in strong caustic potassa lye. The liquid is then diluted with water and supersaturated with acetic acid. To this solution alcohol is added which precipitates the starch; this is first washed with alcohol of 60 p. c., then with like alcohol and some sulphuric acid, and finally with absolute alcohol. Bull. Soc. d'Enc. Mars. 1862. Polyt. J. clxv. p. 67.

Alkalies. W. Knop uses a bihydrofluorate of fluoride of silicon to precipitate potassa and soda in the analysis of ashes. The reagent is prepared by boiling fluosilicated alcohol with water and copper-turnings; this forms the cupric salt of the acid, from which the copper is removed by sulphuretted hydrogen; it gives a gelatinous precipitate in solutions of alkalies on the addition of alcohol. Ch. C. B. 1861, p. 583. Later experience has led him to use fluosilicate of anilina instead, which forms by the action of fluosilicated alcohol on anilina. Ch. N. 159.

Al. Mueller evaporates the solution of ashes in sulphuric acid nearly to dryness, dissolves in water, precipitates with baryta, filters, evaporates, and saturates with carbonic acid, which leaves only the alkalies in solution. J. prakt. Ch. lxxxii. 55.

F. Mohr has given an approximative method for determining potassa in the presence of soda, based on its precipitation by tartaric acid and the acid properties of the bitartrate. Ann. Ch. Pharm. cxix. 123. Lehrb. d. Titr. 2d edition.

C. Luckow recommends a tincture of cochineal for alkalimetrical analysis, prepared by agitating 3 grammes of powd. cochineal with 250 c. c. of a mixture of 3 to 4 vol. of water and one of alcohol. It is colored from purple to carmine by alkalies, which color passes to orange by dilution. J. prakt. Ch. lxxxiv.

S. W. Johnson describes the alkalimetric method in use at Yale College, in which the tincture of cochineal is employed as test-color. Am. J. Sc. (2) xxxv. 279.

R. Wildenstein prefers a decoction of fresh logwood even to cochineal. Zeits. An. Ch. ii. 9.

Sodium. A. Vogel (Polyt. J. clxiv. 452), makes use of the absorption of yellow light by red fluids or substances, as observed by R. Bunsen, to distinguish the colored flame of sodium. A solution of bichromate, or a surface covered with a red substance placed before a yellow flame, appears yellow or colorless. J. Nickles remarks that an alcoholic infusion of ligulin, a watery solution of permanganate, sulphate of cobalt, bromine, and to some extent also that of sulphocyanide of iron possess the same property. J. de Ph. xlii. 170. Schrœder describes the use of paper painted over in part with mercuric iodide for the same purpose. The presence of sodium in pharmaceutical preparations of potassa can thus be shown if only

½ per cent. of chloride, nitrate or carbonate be present; with sulphates the reaction commences at 1 to 2 per cent., in the presence of boracic acid with 5 per cent. The light used for these experiments must be colorless; the substance is fastened to a platinum wire held in a spirit flame.

Potassium may be discovered in a similar manner by means of Simmler's Erythroscope, which does not absorb the colored ray of potassium. Combustible and decomposable substance must first be calcined, as in the case of powd. tartaric acid. The blue glass of the erythroscope may be replaced by indigo-solution. Schweiz. Woch. Ph. 1863, Febr. K. Not. xxvii. 74.

Ammonia. Bohlig considers mercuric chloride to be the most delicate reagent for ammonia. It has before been noticed and employed for volumetric determination by Kappel and Leube (Proc. 1862, p. 181). Ann. Ch. Pharm. cxxv. 21.

Magnesium. Divers states that magnesia is precipitated by sesquicarbonate of ammonia even in the presence of salts of ammonia, though not from dilute solutions unless some of the ammoniacal salt be present, in which case even a dilute solution is precipitated after some time. J. Ch. Soc. xv. 196. Ch. N. 125.

Alumina in bread cannot be extracted by maceration in water, according to E. A. Hadon; Kuhlman's method of incineration and extraction with nitric acid is preferable. Cobalt should not be used to test for alumina in the ashes, since earthy phosphates would give the same reaction before the blowpipe. The best qualitative indication, he states, is a decoction of logwood, which will dye the bread containing alum. Ch. N. 146. This test, as stated in Ch. N. 150, has been in use at Woolwich laboratory for some years.

Iron. F. Mohr considers the use of bichromate of potassa an improvement in the volumetrical assay of iron. He uses an excess of bichromate, which is afterwards measured with a tenth normal solution of ferrous ammonio-sulphate. Polyt. J. clix. 124. Hyposulphate of soda cannot be used directly for measuring ferric salts in solution (F. Mohr, Ann. Ch. Pharm. cxiii. 257), owing to the action of the hydrochloric acid on the hyposulphurous acid; but, according to Landolt, when the oxydised solution of iron has been freed from chlorine and the acid been neutralised, the hyposulphite may be used, the solution being acidified by acetic acid. J. prakt. Ch. lxxxiv. 339. Ch. N. 149.

Tincture of logwood, according to R. Wildenstein, indicates the presence of 1-10,000,000 part of iron in solution. Zeits. An. Ch. ii. 13.

Chromic acid, as has been shown by the same chemist, is detected in very small quantities by infusion of logwood; solutions which gives no indications with nitrate of silver, or with acetate of lead, show the purple color with logwood. Zeits. An. Ch. i. 328.

Nickel is separated from copper, by Dewilde, by means of a solution of potassic tartrate, and boiling with glucose, which precipitates the copper as suboxyd. Ch. N. 165.

Tin. H. Rose precipitates stannic oxyd by means of sulphuric acid; when phosphoric acid is present this is likewise carried down. Compare Ann. Ch. Phys. cxii. 163. Ch. N. 141.

A solution of stannous oxyd in alkali reduces the copper from the alkaline solution of cupric tartrate. Terreil considers this an excellent reagent for tin. Ch. N. 159.

Arsenic. The above reaction also takes place as between arsenious acid and cupric tartrate. *Ib.*

Werther finds that Reinsch's test is only applicable when the lower oxyd of arsenium is present, since solutions of arsenic acid give the coating only after long continued boiling and when of considerable strength. Arsenium is dissolved by an acid solution of cupric chloride, arsenic acid being formed. J. prakt. Ch. lxxxii. 286. Am. J. Sc. (2) xxxii. 277. Reinsch confirms the above, but states that with an increase of hydrochloric acid the reduction does take place. N. Jahrb. Ph. xvi. 135.

Rieckher finds that A. W. Hofmann's reduction of silver by arseniuretted hydrogen gives the means for the most delicate test for arsenic. He describes a simple apparatus for bringing into solution sulphides of antimony which are to be tested, and passes the combined hydrogen gases afterwards through a flask with a dilute solution of silver. Next to precipitation with sulphuretted hydrogen, which indicates 1-72d of a grain of arsenic, the silver solution is the most delicate, as it indicates 1-60th of a grain, and is preferable to Reinsch's and Marsh's tests in all their modifications. If arsenite of silver be dissolved in ammonia and the solution be kept for some time at a moderate heat and then be boiled, metallic silver is deposited as a mirror or produces a dark color, and arsenic acid is in solution. This reaction takes place with 1-180th of a grain of arsenic. The arsenic acid may again be reduced to arsenious, and give the reaction over again. It is, however, interfered with by the presence of sulphuric acid and chlorides. N. Jahrb. Ph. xix. 291, 345.

H. Rose states that many combinations of metallic oxyds with arsenic lose the latter on being heated with sulphur, or in a current of hydrogen, or by being fused with chloride or bisulphate of ammonium; a few arseniates, the ferric and cupric, for instance, are freed from acid by boiling with caustic or carbonated alkalies. Ann. Ch. Phys. cxvi. 453. Ch. N. 179.

To avoid loss of arsenic in calcining the ammonio-arseniate of magnesia, Wittstein dries the precipitate and heats it in the sandbath as long as any ammonia is evolved; it is then heated over the open flame and the residue weighed as AsO_5, $2MgO$. (Zeits. An. Ch. ii. 19)

Mercury. Instead of Smithson's combination, Vanden Brœk recommends a platinum-foil (75 centimetres square) covered with or fastened to tin-foil, the lower end of both to dip into the fluid to be examined, and this to be acidulated with hydrochloric acid. J. prakt. Ch. lxxxvi. 245.

A solution of mercuric iodide in conc. hydriodic acid is not precipitated by sulphuretted hydrogen until diluted. Kekulé finds that the precipitate which then forms is either sulphide of mercury or a combination of the same with mercuric iodide. Ann. Ch. Pharm. ii. Suppl. 101. A very concentrated solution of hydriodic acid decomposes sulphide of mercury, forming iodide and setting free sulphuretted hydrogen.

H. Rose finds that mercuric iodide can not be completely decomposed by alkalies or their sulphides, or by litharge, or iron; heating with metallic copper furnishes accurate results; but the decomposition is more readily effected by fusing with cyanide of potassium mixed with double its weight of anhydrous lime. Carius' method of precipitating the iodine out of an acid solution of the mercuric iodide by means of nitrate of silver is not so accurate, owing to the solubility of the mercuric salt in its nitrate. A solution of mercuric iodide, in iodide of potassium or otherwise, deposits all the mercury in the metallic state on being made alkaline and afterwards mixed with stannous chloride. It is also decomposed by digestion with metallic zinc under water. Zeits. An. Ch. ii. p. 1. For cyanide of mercury, see *Cyanogen*. Anal. Ch.

Silver. J. Nicklès gives rules for the detection of silver in forensic cases (J. de Ph. xli. p. 277) by electrolytic deposition from a solution in cyanide of potassium, the absence of interfering metals having been previously ascertained. Ch. N. 153.

ORGANIC SUBSTANCES.

Cyanogen. For the analysis of metallic cyanides, H. Rose recommends to heat them with an excess of sulphuric acid or basic mercuric sulphate, combining sometimes the use of carbonate of ammonia, to convert the metallic sulphates formed into oxyds. Rammelsberg's method of reduction with chloride of ammonium in a current of hydrogen is likewise applicable in some cases. When the cyanide is soluble it should be determined in the form of cyanide of silver. Mercuric cyanide is best decomposed by passing sufficient sulphuretted hydrogen through its alkalised solution, and after removing the excess of sulphide by means of an alkaline solution of zinc and neutralising with sulphuric acid, by precipitating the cyanogen with nitrate of silver. From Ann. Ch. Phys. in Ch. N. 157.

[The present writer has employed an alcoholic solution of ferric chloride for the purpose of removing the sulphuretted hydrogen in an analogous process for the decomposition of the alkaloid compounds with mercuric iodide.]

Alcoholometry. The original tables of specific gravities and percentages established by Gay-Lussac and Collardeau, which had only been partially published, and which Ruau had recalculated from other data, have now been published by Collardeau. Compt. liii. 925. Ann. Ch. Pharm. cxxii. 375.

Alcohol from beet-roots, according to Cabasse, may be discovered in that from wine, by the pink-color which it produces when shaken with sulphuric acid. Rép. Ph.

[Since this coloration may be due to almost any carbonizable substance, the value of the test appears very doubtful.]

R. Günsberg describes a volumetrical assay of alcohol in fermented saccharine fluids, founded on the relative quantity of the alcoholic fluid necessary to produce a permanent precipitate in a concentrated solution of gum in water. Ch. C. B. 1861, p. 677.

Acetic acid. Bronner (Ch. C. B. 1862, p. 43) and Fresenius (Zeits. An. Ch. i. 253) give acidimetric methods for testing vinegar. The latter uses a test solution of caustic soda, 10·2 c. c. of which correspond to 10 c. c. of the normal solution of oxalic acid.

Tannic acid. Marriage employs for the volumetric assay a solution of ammonio-sulphate of copper, which forms an olive green precipitate, while it darkens (on account of the alkali) the color of the liquid. Am. J. Ph. xxxiv. 429.

Glucose is detected, according to Mulder, by the decolorisation of an alkaline solution of indigo. Vogel believes that cane-sugar produces the same action, owing to the presence of free (?) acid in the indigo carmine, and proposes litmus instead. C. Neubauer finds that indigo is preferable, being a very delicate reagent, but not equal to Fehling's solution. Zeits. An. Ch. i. 377.

Alkaloids. J. Erdmann gives some additional experiments to show the value of extraction with amylic alcohol, of alkaloids from poisoned animals, in the case of strychnia and morphia in particular. Ann. Ch. Pharm. cxxii. 360.

R. Palm concurs in appreciating this method, and makes some improvements in it. N. Jahrb. Ph., Aug., 1862. A. D. Circ. vii. p. 5.

The volumetrical assay of alkaloids by means of a solution of mercuric iodide in iodide of potassium, introduced at your last meeting, has been somewhat extended by F. F. Mayer, in Am. J. Ph. xxxv. 20. Ch. N. 174. Rép. Chim. Appl. Mars, 1863. Rép. Ph. xix. 451. Zeits. An. Ch. 1863, p. 2.

A. Valser, in the prize essay of the Société de Pharmacie for 1862, dated July 22, 1862, treats on the reactions of alkaloids and chooses likewise the iodohydrargyrate of potassium as qualitative and quantitative reagent. He alludes only to De Vrij as the original author of the test, while M. E. Baudrimont, the reporter on the theses, speaks of Nessler and Groves. The mode of extracting the morphia is peculiar, acetic ether being used in Stas' process in place of pure ether. J. de Ph. xlii. 49. Zeits. An. Ch. ii. 79, where a table is given for the distinction of some alkaloids.

Chinoline from cinchonina, according to C. G. Williams, after boiling with iodide of starch and subsequently with ammonia, produces a purple blue, while the chinolina (and lepidina) from coal tar does not show this reaction. Arch. Ph. clix 270.

Acids. Pisani describes the use of a bulb-tube for determining the nature of certain acids contained in substances from which they may be evolved by means of bisulphate of potassa, the vapor being passed through an absorbent like lime water (for carbonic and oxalic acid) or ferrous sulphate, etc., contained in the tube. Ann. Mines (5) xix. 477. Polyt. J. clxiii. 62.

Volumetric analysis. E. W. Davy recommends ferrocyanide of potassium in combination with bichromate of potassa as reducing agent in testing chloride of lime and manganese. Ch. N. iii. 274, 287.

Picrotoxin. Dragendorff gives a very circumstantial process for eliminating this substance from liquids, like beer. Its value appears as doubtful as that of Langley's. We refer for it to J. prakt. Ch. lxxxvii. 344.

Lycopodium and *flour.* Cailletet (Falsifications, Bruxelles, 1860) and Flueckiger (Schweiz. Z. f. Ph. 1862, No. 7) recommend for the discovery of mineral substances like plaster, sand, etc., to shake up a weighed quantity of the organic substance in a test tube with chloroform, which will cause the light organic matters to separate and float on the surface, so that they may be removed by repeated rinsing with more chloroform, and the amount of mineral substances be found by drying and weighing the residue. Zeits. An. Ch. ii. 98.

Dialysis. Guignet has used diaphragms of porous clay, by means of which some solutions may be dialysed which parchment paper does not allow of. Compt. lv. 740. Am. J. Ph. xxxv. Am. D. Circ. vii. 53. All journals contain notices of some applications of this method, offering no points of particular novelty.

Spectral analysis. Your reporter must refer to various publications in Ann. Phys. Chemie, Compt. rendus, J. prakt. Ch., Chemical News, Ph. J. Trans., and others.

ANIMAL AND PHYSIOLOGICAL CHEMISTRY.

Guanina. A. Strecker, in continuing his researches on this base, describes a process for its preparation from guano, and treats on some of its derivatives, and its relations to kreatina, kreatinina, xanthina, theobromina, and caffeïna. By oxydation with chlorine among other products a new base, *guanidina* ($C_2H_5N_3$), is formed. Nitrous acid causes its conversion into xanthina, the latter treated with iodide of methyl yields a substance isomerous with theobromina. (Comp. Proceed. pro 1862).

Xanthina. H. Bence Jones notices a deposite of xanthina of frequent occurrence in the urine of an otherwise healthy boy. J. Ch. Soc. xv. 78.

Alloxan. Liebig states that he has separated alloxan by means of dialysis from gelatinous mucus derived from an inflamed bowel. Ann. Ch. Pharm. cxxi. Am. D. Circ. vi. 118.

Urea. Schwarzenbach believes that the substance contained in the vitreous liquor of the eye and supposed to be urea, is chloride of sodium. Viertelj. Ph. xi. 39.

H. Sittel prepares urea from the mother-liquor of frozen urine. N. Jahrb. Ph. xv. 352.

Sarcosina results, according to Volhard, from the action of methylamina on monochlor-acetic acid. Ann. Ch. Pharm. cxxiii. 261. [It has long been known that kreatina is readily split into urea and sarcosina].

Kreatinina. Neubauer gives his experience on the quantitative determination of this substance in the urine, from which it is separable by chloride of zinc; other metallic salts form like compounds; urine contains no kreatina. Ann.Ch.Pharm.cxix. 27. Ch. C.B. 1861, p. 849. Ann. Ch. Pharm. cxx. Ch. C. B. 1862, p. 413. The results of his determinations of kreatina and kreatinina, contained in the flesh of various animals, do not agree with those of previous operators, but are more precise. He finds that kreatina in aqueous solution passes by continuous heating into kreatinina, even without the coöperation of acids, and to this circumstance he ascribes the small yield of kreatina from flesh compared with the amount of kreatinina, as shown by former analyses. Zeits. An. ii. 22.

M. Lœbe describes another similar method for the preparation of kreatinina by means of an alcoholic solution of neutral chloride of zinc. J. prakt. Ch. lxxxii. p. 170.

Cholina ($C_{10}H_{13}NO_2$) is an alkaline base found by Strecker to a small amount in hog and ox-gall. Ann. Ch. Pharm. cxxiii. 353.

Pyocyanin, the blue coloring matter of pus, has been described by Fordas (Compt. li. 215, J. prakt. Ch. lxxxv. 249); it is obtained from the water in which, after the addition of some ammonia, the soiled bandage linen is immersed, by shaking with chloroform and neutralization with an acid, of the impure residue left by the chloroform on vaporisation. It differs from biliverdin, cyanurin, from Chevreul's blue bile-pigment, and that of Lecannu from the blood.

Bile. For some characteristics of bile communicated by Noël, compare J. de Ph. and Am. J. Ph. xxxiv. 506.

Urine. H. Bence Jones shows that the appearance of crystallised phosphate in urine may occur by neutralization of the acid as well as by the addition of lime salts. J. Ch. Soc. xv. 8.

The same chemist concludes from a large number of experiments, that the relative amounts of uric and hippuric acid are neither constant, nor as yet determined with anything like sufficient accuracy for the requirements of physiology. J. Ch. Soc. xv. 81.

The amorphous deposite of crystals in healthy urine, according to H. Bence Jones, is a mixture of the urates of ammonia, soda, and potassa. J. Ch. Soc. xv. 201. Heintz communicates on the same subject, stating that he found it by his analyses to consist of the urates of soda, lime, and magnesia. J. Ch. Soc. xv. 467.

E. Nicholson shows, by a series of experiments, that the density of urine is no safe guide in determining the percentage of solid ingredients. J. Ch. Soc. xvi. 25.

Dragendorff prepares the mercurial test-liquor for urea by precipitating 96·855 grammes of corrosive sublimate with dilute caustic potassa or soda, and washing the yellow precipitate by decantation; it is then dissolved in moderately dilute nitric acid to 1 litre with the necessary correction. Ph. Zeits. Russl. 1862, p. 104. Ch. C. B. 1863, No. 15.

Urine of herbivora. According to Henneberg, Stohmann, and Rautenberg, the ferric chloride in Liebig-Wreden's method for determining hippuric acid should be replaced by a solution of ferric nitrate, because the former in dilute solution is decomposed by the test-paper; the latter to be covered with ferro-cyanide of lead. There still remains some irregularity. In the determination of urea a correction must also be made for dilution. In determining the chlorine they use the full strength mercurial solution (for urea). Ann. Ch. Pharm. cxxiv. 181. Zeits. An. Ch. ii. 87. Ch. C. B. 1863, No. 12.

Blood. Pfaff determines the age of blood-stains by the length of time required to dissolve or bleach them in a solution of 1 grain of arsenic in 2 drachms of water; when fresh, solution takes place in a few minutes, when over a year old, in from 4 to 8 hours; in the latter case the bleaching is generally incomplete. The same solution may be used to determine the species, a clot, etc., being first exposed to it so as to dissolve the outside portion, and then examining the surface, laid bare, with the microscope. From Caspar's Viertelj. f. Med. xxi. 2, in Zeits. An. Ch. ii. 109.

Erpenbeck uses the observation of Barruel in regard to the specific odor of human blood for its distinction. Ib. 111.

Hæmatoidin and bilifulvin, according to Jaffe, are identical substances. Virchow's Archiv. xxiii. Am. J. Med. Sc. 1863, 184.

Gall-stones. J. L. M. Thudichum continues his researches on their composition. J. Ch. Soc. xvi. 34.

Gouty excrescences. W. Pfeiffer has examined one found on the hands of a gouty patient. It was entirely free from phosphoric acid and lime, and contained 47 per cent. of uric acid; also soda and a trace of magnesia, some chloride of sodium, 20 per cent. of fat, etc. Arch. Ph. clxiii. 132.

The above report, including publications up to July 3d, 1863, so far as accessible, together with the following report of the Corresponding Secretary, is respectfully submitted to the Association by

FERDINAND F. MAYER, Chairman.

REPORT OF THE CORRESPONDING SECRETARY.

The resolution of the American Pharmaceutical Association, adopted at the last meeting at Philadelphia, which was intended to stimulate the production of cream of tartar from American wines, was transmitted by your Corresponding Secretary, through our fellow member Mr. W. J. M. Gordon, to the President of the Wine-growers' Association, of the Ohio Valley; no reply thereto has been received.

Since my connection with the U. S. Army Laboratory, at Philadelphia, I have endeavored to try the purification of American tartar. With the permission of Dr. A. K. Smith, the director of the laboratory, I sought to enter into correspondence with the Wine-growers' Association; but, from a letter of Mr. Gordon, I have learned that he has for some time past offered a fair price for crude tartar of American production, without obtaining more than a few small lots. He is likewise satisfied that but little will be offered, since there are but few wine-growers who keep their wines any length of time. The larger number make and sell their wines at once, and there is a common impression, particularly among the Germans, that the wine is better kept on the tartar; consequently, those who keep stock on hand keep it in old casks without removing the tartar.

In accordance with the Constitution, the Corresponding Secretary has addressed the various local Pharmaceutical Associations, and has obtained the following information:

The Massachusetts College of Pharmacy has endeavored to keep up the interest in pharmaceutical matters among its members. The monthly meetings of the Trustees have been very well attended, and items of interest have been discussed to the benefit of all present.

The College of Pharmacy of the City of New York.—The efforts of this College to afford suitable instruction to students in Pharmacy have been attended with better success than in former years. Since the report made at the last annual meeting of this association it has graduated nine students. The classes during the last session numbered twenty-three students. After the removal of Professor J. M. Maisch to Philadelphia, and his subsequent resignation of the chair of Materia Medica and Pharmacy, Professor F. F. Mayer, who formerly held the chair of Chemistry, was appointed to fill the vacancy, and the chair of Chemistry has been filled by the appointment of Professor Alexander F. Everett. It is to be hoped that the labors of the College in future will be still more successful, than in past.

The Philadelphia College of Pharmacy has been proceeding in its regular sphere of action. Its lectures during the sessions 1862—63 were attended by seventy-five students, fifty-eight of whom were from Pennsylvania and the balance from other States and Europe. Of these, twenty-one graduated last spring. The faculty remains unchanged. The American Journal of Pharmacy has been continued, of the usual size, notwithstanding the considerable diminution of its subscription list from the rebellious States. No new enterprises have been undertaken since the last report.

The Maryland College of Pharmacy continues to hold monthly meetings for business purposes and for scientific discussions, though the meetings are not as well attended as their importance demands. The attendance at the lectures has been materially affected by the demand for apothecaries in the army in the capacity of hospital stewards. The class of 1862—63, contained twenty students, of whom five graduated. The chair of Materia Medica was still vacant at last accounts; the two other chairs are filled the same as last year.

THE WASHINGTON PHARMACEUTICAL ASSOCIATION, we are sorry to learn, has no existence now; it has but rarely met since the American Pharmaceutical Association convened in Washington. It is to be hoped that, with the restoration of peace, the interest in pharmaceutical matters will be rekindled and a reorganization effected.

THE CINCINNATI COLLEGE OF PHARMACY has suffered very much since the outbreak of the war. The course of lectures for which the College were making preparations, under very favorable circumstances, had to be discontinued, and under the excitement of the times it has been found impossible to keep up the interest among the remaining members, while others went off to the war. The location of Cincinnati in the close proximity of one of the theatres of this war had, no doubt, much to do with detracting from the interest in other but war matters. Business, however, has been very good, while assistance was very scarce. It cannot be doubted that after the war is over no difficulty will attend a reorganization of the College.

THE ST. LOUIS PHARMACEUTICAL ASSOCIATION has suffered by the war, perhaps, more than any other Pharmaceutical College in the loyal States, and no progress can be expected from there where the excitement has frequently been very intense. Still, the organization has been kept up, and it is to be hoped that it will soon reassume its course of usefulness. Their Committee on the Progress of Pharmacy, from whom we have not directly heard, consists of Alex. Leitch, chairman, Thomas Scott, Hubert Primm, Edwin R. Swann, Eugene L. Massot.

THE CHICAGO COLLEGE OF PHARMACY.—We do not know whether this College is still in existence, or whether it has shown any signs of life and usefulness. Letters directed to members there have received no answer.

J. M. MAISCH, *Corresponding Secretary.*

REPORT ON THE DRUG MARKET.

The precept of your Committee on The Drug Market, as found in the resolution upon which the Committee was appointed, is, "To report annually the fluctuations in the supply and demand of drugs; the variations in quality; and adulterations and sophistications coming under their observation, or reported to them by others; and, that they be authorized to make a report on any adulterations and sophistications of immediate interest through the pharmaceutical journals as soon as practicable after their discovery; and, that all members are requested to furnish information of the kind required, to the Committee without unnecessary delay."

Thus instructed, your Committee beg leave to offer the following report, which for convenience and perspicuity is divided into three parts, namely: a cursory review of the Drug Market proper; a review of the market for pharmaceutical or medical chemicals, as exhibited by an examination of a few leading articles; and general deductions with remarks upon some of the influences which appear to affect prominently the character and moral tone of the market.

In reviewing the market for drugs proper, it seems unnecessary, if not useless, to attempt to embrace the whole market of the country, or to take up a large number of articles. Hence the New York market is principally referred to, because it is a large and important market, and the only one with which the Chairman of the Committee has even a superficial acquaintance. A few prominent articles have been selected for individual notice, and these, so far as practicable, are intended to represent classes or groups in the market, so as indirectly, but certainly very imperfectly, to represent the whole.

All the quotations and remarks of this portion of the report apply only to drugs in original packages, and principally in what are known as first and second hands.

The general feature of the market, which for prominence and importance is first entitled to notice, is the unsettlement and almost universal rise in prices without a proportionate increased demand.

This unsettled condition appeared to arise in the market for foreign drugs, in consequence of the long uncertainty as to the new tariff and the commencing fluctuations in exchange. From this point, aided by inflation and depreciation of currency and a consequent increased tendency to speculation, prices became, in many cases, enormous, and the fluctuations often sudden and great. The large demand for medical supplies for the army had doubtless also an influence in running the market up. The organization of armies and the establishment of numerous large depots of supply necessarily abstracted large quantities of drugs from the market at liberal prices, and returned a corresponding amount of capital at once into the market to stimulate speculations. This enormous rise in prices, when applied to the large stock on hand in the market, and placed there under the low tariff and the previous rather depressed condition, yielded proportionately enormous profits, furnishing great excesses of capital in the market, with the consequent tendency to inflation and speculation. These circumstances taken in connection with the facts that depreciated capital or currency finds no outlet for profitable investment abroad, and is always restless at home, may mainly account for the great general rise in the market.

Then as excessive action always tends toward a corresponding reaction, so, within the past two months there has been a very general downward tendency in the market, with a strong probability that prices have not yet "touched the bottom."

In the following notice of a few prominent articles, the statements are not to be taken as being critically accurate, but only as representing the market as it appeared to those who dealt in it without an intimate knowledge of its intricacies and under currents; for, it is here, as in arts and manufactures generally, most difficult to obtain accurate information or knowledge, because, those who possess it are least likely to impart it, and most likely to conceal it.

Aconite Root. This article has been perhaps in the usual quantities in the market, but very generally of bad quality. Indeed it has been difficult, throughout the year, to find parcels that were at all fit for use. The solid resinous fracture and dark resinous appearance internally, which characterize the active root have not been seen. It is either dry and pithy with a cavity in the centre of the root, or tough and shrivelled, intermixed with occasional starchy roots, which appear to have come from young immature plants if they be aconite at all, and all of it comparatively tasteless. The root is, however, generally very clean and dark in appearance, and passes for being "bright and handsome." One lot of over two thousand pounds, a sample of which is presented with this report, very well illustrates the general character of this drug during the past year. It is all so light, so bright, so spongy and shrivelled, and so uniform in its comparative tastelessness, as to lead to the belief that it has all been partially exhausted for the preparation of Aconitia before being sent to this market. Its low price, 15 to 20 cts. per pound, and its abundance when other similar articles of better quality are high or scarce, show that it is a paying article, and thus strengthen the above opinion.

Alcohol. Among the articles of primary importance which have fluctuated largely in price, alcohol holds a prominent place. Of the various grades of alcohol, that called 95 per cent, or the Alcohol Fortius of the present Pharmacopœia, may be taken to represent the whole. At the commencement of the Association's year, namely Sept. 1862, it sold at 65 cts. per gallon. From this it rose with occasional fluctuations, during the remainder of 1862 to 81 cts., being once as high as 90 cts. By the end of January, however, it reached 1·10 cts., and early in February brought 1·25 cts. Thence it gradually declined to 95 cts. without much fluctuation till the present time, when it varies with the price of whiskey, between 90 and 95 cts.

Within the past year and a half, or since, it rose above 42 cts. the quality, as made by the same manufacturers, and without any known change in either the apparatus or management, has materially fallen off, and it now generally contains such a proportion of foreign hydrocarbons that good clean ether can not be made from it by the usual process. For this reason some manufacturers have had to abandon its use for such purposes, and take the higher grade called, "Cologne spirit," or alcohol, which has been "leached" through charcoal before the final rectification. Some years ago a similar step had to be taken, from the alcohol of 89 per cent., to that of 95 per cent., and no cleaner ether is now produced from Cologne spirit at 102 cts. per gallon, than was formerly obtained from 89 per cent. alcohol at 35 cts. per gallon.

This is a good illustration of a tendency in the common market to multiply names, grades and prices, when temporary increase of profit is likely to accrue, and will warrant a little farther examination into the history. When the present rectifying column was applied to the stills, and alcohol of 95 per cent. easily and cheaply obtained, those makers whose enterprise and capital had led them to adopt it in advance of its general application commanded large profits, and the increased price remained disproportionate to the increased strength, until in the race of competition the improved apparatus was more generally adopted, and most manufacturers obtained the superior strength by similar means. Then, as the earlier makers had to yield their control of the market through superior strength, they sought the same result through small reductions in price, until little by little the competition brought down the price. As is generally the case, when prices get control of the market, the competition and underselling does not stop when all get down to a fair close profit, but the race is continued, and the quality next has to yield little by little to keep up the profits. For some purposes, however, the unclean alcohol, though of full strength, would not answer, and among these purposes was the making of artificial or factitious wines and brandy, for which an odorless alcohol was required. Under the stimulus of increased demand and profits, the hitherto small quantities of alcohol passed through strata of freshly burned charcoal became larger, and the new grade under the name of Cologne spirit became an article of regular trade. This article brings as yet 10 c. per gallon, more than 95 per cent. alcohol, and is really in quality as it is in strength, about what 95 per cent. alcohol used to be. But within a few months past it is sensibly falling off in cleanness, and the necessity for another better grade is gradually growing up.

Aloes. During a large proportion of the past year the better grades of aloes, namely, those prepared by exposing the juices of the plant to the sun and air only, in drying, have been very scarce and high, sometimes altogether absent from the market. The best varieties of the so-called socotrine aloes, characterized by a ruby-red color and fragrant aromatic odor, were very rarely to be had during the year, and the price even for lower grades, instead of 42 to 46 c. has been 65 to 85 c., and this without much variation either in the supply or price in foreign markets. With all this, the quality has been low and very variable, leading to the inference, not alone indicated by this article, that, particularly in these times, anything is good enough for the American markets. The inferior grades of aloes known as Cape, Curaçoa, Bonaire, Barbadoes and Hepatic, have varied much less from the usual prices, and, except the Barbadoes variety, have been abundant. Cape at 23 to 26 c., Curaçoa at 40 to 50 c.; Bonaire at 42 to 46 c.; and Hepatic at 60 to 70 c. Probably from an unusual demand for veterinary purposes Barbadoes Aloes has been very scarce and occasionally absent.

Three varieties of Aloes are now officinal in the new Pharmacopœia under the names of Barbadensis, Capensis, and Socotrina, the definition of each, except the Cape variety, being based upon the species of the plant which is supposed to furnish it. The real practical difference, however, probably depends more upon the mode of preparation; and the names are to be regarded more as conventional indices of quality, than as evidences of the sources, either botanical or geographical from whence the grades are obtained.

Belladonna. This article, though neither scarce nor high in price, at any time within the past year, has been so uniformly bad in quality, that there has been great difficulty in getting any fit for use. Bales upon bales of it, of variegated dull colors, (excepting green,) musty or nearly odorless, containing various other plants, and in two instances, at least, a notable proportion of digitalis, could at all times be found, at prices from 22 to 30 c. per pound. From the frequently torn and rotten condition of the bales it might be inferred that the general stock was old, as well as otherwise bad, and yet this article must have been largely used within the past year for tinctures.

Camphor. This drug has been very high and somewhat variable in price, but of uniform quality and always in abundance.

Next after sulphate of quinia and opium, this article is probably most subject to speculative variations in price and demand, whilst from its nature and properties as a concrete volatile oil, it is, of all drugs, perhaps the least susceptible to variations in quality, or to sophistication.

Cardamom. The short, heavy, plump capsule, with round, full, oily seed, and fine aromatic odor,—that is the true, unmixed Malabar cardamon, was only rarely to be found during the past year; while the long shrivelled capsule, with few, light-colored, flattened spongy seeds, of a dull, somewhat terebinthinate odor and taste, seemed to have taken possession of the market, and at prices which for the better variety, would have hitherto been fabulous. The occasional parcels of the better variety, commanded prices such as $3·00 and 3·50 per pound, whilst the inferior qualities have been generally quoted at $2·00 to 2·75.

Cinchona. True Calisaya Bark, or Yellow Cinchona, has been in about the usual quantities, at prices from $1·65 to 1·85 per pound, and always easily accessible to the few who seek it. Like other articles of small demand, it has maintained a pretty even market, chiefly from being without the pale of speculation, and because its inferior representatives of the Cinchonas, are almost universally taken by pharmaceutists. Soon after the East Side or New Granadian Barks, took the place of this, in the manufacture of Sulphate of Quinia, they also appear to have been generally substituted in pharmacy, so that instead of a cinchona containing 2 to 3 per cent. of alkaloids, pharmaceutical preparations of the present day, are made from those which contain the half of one per cent., and cost from 15 to 70 c. per pound.

Red Bark, or Red Cinchona, is still less used, and has fewer substitutes. It is always to be had of excellent quality, at prices varying from $1·55 to 1·70 per pound.

Colchicum Root and Seed, have been unusually scarce and high, and the root rarely of good quality. The ordinary market stock of the root has varied little in price, being usually sold at 20 to 24 c. But the more important seed, has always been very high and variable in price, rarely below 60, and sometimes as high as 80 c. for fair parcels. The large, round, plump, brown and bitter seed, commonly known as English Colchicum seed, has been almost entirely absent during the year, and the most careful buyers have generally been obliged to take the cleaner and better parcels of the black or German seed; and it is doubtful whether this variety, when well selected, is not as good as the first named.

Ipecacuanha. This drug, without material variation in quality, has been extremely high in price, and often very scarce. In February it was sold as high as $3·50 per pound, and has at no time fallen below $3·00. Some lots have appeared in the market during the year, that were damaged. In some cases the damaged portions are found throughout the ceroon. From having been put up in this condition, or in such a state as to assume this condition, it is designated in the market as "country damaged." Another condition also occasionally met with, wherein the damaged portions are upon the outside only, is known as "ship damaged." When the damage is slight, these conditions are rarely seen or recognized, except to obtain indemnity from foreign shippers or insurance companies, or to cheapen the market for sharp, close buyers. The above remarks apply only to what is known as Rio Ipecac., or Ipecac. from Rio de Janeiro. The inferior Carthagena Ipecac. has been generally quoted at $2·40 to 2·62.

Jalap. This drug has also been sold at enormous prices throughout the year. From 90 c. per pound, it had by November, 1862, reached $2·00, and is now not to be had of fair average quality, short of $1·90. Although scarce, and not in large supply, there has been no time when good parcels could not be had at the prices asked; for, as is often the case, when prices are very high, the highest grades are of slowest sale, and rarely wanted. The Jalap of the last two years appears to contain more very small fusiform tubers, (not false or fusiform Jalap,) and more very large ones, so that it is less uniform or has the uniform portions selected for better markets.

Opium. The market for this drug has not been behind that of any other in the number and suddenness of its fluctuations. Always a favorite drug for speculation and investment, and like sulphate of quinia and camphor, always liable to run out into channels of speculation, among persons who have no knowledge of the article or the market, it easily becomes a leading bubble, to be inflated or compressed by each steamer's news of short crop, diminished stock, vigor of demand, difficulties of exchange, etc. Under ordinary circumstances, Smyrna Opium, of fair quality, is the only kind which reaches this market, and the stock in Boston, New York and Philadelphia, is usually said to average 200 cases. Since the indiscriminate sale of prize goods from captured vessels, by the Government, however, all sorts of opium are to be found, and even without any attempt at very close buying, it is difficult to avoid this "prize opium," as it is technically called. The price of strictly prime Smyrna opium at the beginning of the year, (Sept. 1862,) was about $7·25 per pound. From this it arose with numerous fluctuations until March, when it reached $11·00, and from that point declined to the present time, when it is sold at $8·75 or thereabout, but has been as low as $8·10. Thirteen cases purchased with fair average distribution throughout the year, cost an average of $8·50, the lowest price paid, being $7·31, and the highest $11·00. This average is, however, by chance below that of the general market for the year.

Sulphate of Quinia. This appears above all others to be *the* "fancy" article of the market to which it belongs. The speculations and "corners" into which it has entered, and the amount of capital employed in its market management during the past two years would doubtless make a most curious history. Beyond all other articles, this has tempted outside persons to invest in it for speculation, and as such are generally easily frightened, they get "weak kneed," as it is called, and by selling out in a falling market, aid to depress it often to extremes upon which opposite extremes find surest basis. It is a curious circumstance alleged to be true, particularly with outside speculators, that they commonly overstand a rising market and miss the highest point, but will rarely pass through a depression without selling near the lowest point.

During the early part of the year, Sulphate of Quinia sold at full prices, and by May had reached its highest point, namely, $3·60 per ounce. But since that time it has fallen steadily without material fluctuations, until it is now selling at about $2·55, and still with a downward tendency. It is generally understood, but with what accuracy cannot be stated, that the average cost of manufacture of this article is about $2·50 per ounce. If this be true, manufacturers cannot sell it at fair profit below $2·87, and therefore the lower as well as the higher prices must be generally chargeable to speculation.

Sulphate of Cinchonia. The Surgeon-General of the Army, under the impression that this salt might be in part economically substituted for Sulphate of Quinia, placed it upon the Army Supply Table in large quantities, and thus introduced it to a considerable extent as an article of the common Drug Market. Always an unsaleable collateral product in the manufacture of Sulphate of Quinia, it had probably in the course of years accumulated upon the hands of manufacturers to a large amount, and thus the large demand suddenly created was promptly supplied, and doubtless yielded a rich return to the manufacturers, even at the low price of 42 to 46 c. per ounce.

Rhubarb. Russian Rhubarb which usually sells at $3·75 per pound, has readily brought during the past year $6·75, and has always been accessible and of good quality in the small quantities in which it is used. The higher grades of Chinese Rhubarb selling in ordinary times at 60 to 80 c., have commanded from $1·80 to 2·00, with a satisfactory supply and quality, although choice parcels have not been as frequently met with as heretofore. Though by no means so uniform, nor so fine in quality as the Russian, the choice selections can be very usefully and properly substituted for it in general use. But unfortunately neither of these grades are at all popular in the market, the principal supply being of lower grades of the Chinese variety, from which the upper have probably been originally selected, at prices 15 to 20 per cent. lower.

Soap, Castile. Few articles in pharmaceutical use have changed so much within a few years past as Castile Soap. From its officinal character as a soda soap, made with Olive Oil, it has been debased to an incongruous mixture often of filthy fats and alkalies with as much water as science and skill can get into a solid form. There appears to be only one step remaining in the degradation of this somewhat important drug to reduce it to the level of the low grades of soap for domestic purposes, and that is the introduction of silicate of soda to replace fats and alkalies, and hold water. Judging from past results, it will not probably be long before it will be reduced to the level of the lowest domestic soaps in this respect, one of which recently examined for the Government by the Chairman of this Committee, contained less than 5 per cent. of true soap, and consisted mainly of silicate of soda and water.

Sarsaparilla. During the past year the general market has been repeatedly searched in vain for a single parcel, no matter how small, of true Rio Negro Sarsaparilla. And when at last a parcel did arrive by special importation, it was so little known at the Custom House that it was difficult to obtain an appraisement at any thing like its real value. This, the most valuable, if not the only valuable variety of Sarsaparilla, has entirely disappeared from the market, and would probably be forgotten in the channels of trade, except that some of the makers of extracts and syrups still represent their preparations as being made from it. The cost of this variety is about 50 c. per pound in Rio de Janeiro, and about 90 c. here, without profit.

Scammony. Throughout the year Scammony of proper officinal strength and character, namely, containing at least 75 per cent. of Resin of Scammony, has been abundant and at fair proportionate prices, but of very slow sale, and limited demand. The quality of the higher grades has varied between 75 and 81 per cent. of the resin, and the price from $12·50 to 14·00 per pound. For extracting the resin, or for any honest use wherein the proportion of the resin is regarded, these qualities are cheaper than the lower grades with which the markets have been mainly supplied for years past.

Senega. This drug has been unusually scarce and high, though mostly of fair average quality. In the beginning of the year instead of 35 c., it was selling at 60 c., and by May had arisen to $1·45. From that point it gradually fell off to its present price of 80 to 82 c.

Senna. This drug has been plentiful and at low prices, not having participated in the general rise for some unexplained reason. Tinnevelly Senna has sold pretty uniformly at 24 to

28 c., the quality generally being only fair, and the supply apparently old. The East India variety has sold at 19 to 20 c., and the Alexandria at 15 to 17 c. The quality of the last named variety that was generally accessible, has, however, been very low. That is, the leaves though much broken, were dry, odorous, and of a good color, but the proportion of stems, stones, etc., was unusually large. One sample garbled with great care yielded only 43 per cent., of good Senna leaves, the remaining 57 per cent. being stems, stones, dust, and finally broken senna. Another sample taken from various parts of a good bale, yielded, of not extraordinarily good senna, but such as would come fairly within the intention of the Pharmacopœia, 76 per cent. that was considered fit for making the officinal Fluid Extract of Senna.

Serpentaria. The greater proportion of this drug in the market during the past year has been of inferior quality doubtless through deterioration from age and bad management, so that it has been difficult to get even small parcels that were fit for use. The price, instead of 28 c., has varied between 60 c. and $1·80.

Spigelia. This probably of all the drugs of the market has been the most scarce, and held at the highest prices, while the quality has seemed to be of little moment so long as it could be called Pink Root. Much of that sold during the year has been at prices in the neighborhood of $3·00, and some as high as $3·25 per pound. Whilst of late, since new sources have been opened, and new attention paid to collecting it under the stimulus of high prices, it has declined to $1·50 and is still falling off.

Valerian. This article, of good quality, has been scarce without any great advance in price. Indifferent and bad varieties have been in abundance at prices from 14 to 22 c. Good, so called, English valerian was at one time as high as 40 c., but can now be had at 28.

From this cursory, and perhaps not altogether trustworthy, review of some of the prominent drugs of the market during the period intervening between the annual meetings of the Association, it will be seen, that with a few curious exceptions the prices have advanced variously from 20 to 500 per cent. whilst the qualty has fallen off;—that the rate of advance has no kind of uniformity, and, that in most instances perhaps, it bears little discoverable relation to the true causes of advance hitherto noticed. A large proportion of the sales of the past year have doubtless been from old stock, and as importations from abroad, as well as collections at home, have been small, it follows that the general stock of the market is much reduced, if not small;—the quality lower than usual, and the prices disproportionately high.

This condition of the market when applied to pharmacy, indicates that those pharmaceutists who desire to fulfil their professional duty to the sick, and to physicians, should use especial care and foresight in their selections, and be prepared for much trouble in the management of their supplies.

In coming now to review the market for pharmaceutical or medical chemicals, in contradistinction to drugs proper, a different course becomes necessary.

Here the druggist, properly so called in contradistinction to the pharmaceutist, is not only the common source, but is practically the original source of supply.

It is impossible here to take up any considerable number of articles and examine them with a useful degree of care and accuracy in consequence of the time and skill required, and it appeared comparatively useless to give the simple opinion or judgment of the committee without some such examination as would furnish the basis for a judgment by others. Hence it was deemed best to select a very few prominent articles, examine them carefully by the Pharmacopœia tests, or in some other simple practical manner, and state the results. The members of the Committee in Boston, New York, Philadelphia, and Baltimore each bought two or three specimens of each of the articles determined upon and sent them for examination. These specimens were purchased from the best usual sources of supply in the several cities. That is, those stores where cheap and inferior preparations were known to be sold, were avoided; and only those from which the best class of pharmaceutists, and the best class of country physicians obtain their supplies, were resorted to. This Committee well knows that preparations of a very low grade can be easily had at all times and everywhere, but that such fairly represent the market for those who desire to avoid them, is not held to be true; and hence the scrutiny was directed only to that highest grade of preparations which are easily accessible to all at what are generally considered to be moderate prices. This course undoubtedly does not represent the whole market, for beside the preparations of low grade alluded to as being both easily obtained and easily avoided, there are classes which profess to come strictly up to the officinal standard, but the high prices and limited use of these forbid their being considered in connexion with the general market, and they are in this respect of far less practical importance than the very low grades.

The examinations of the specimens do not profess to be analyses, nor even assays, but simply the application of practical tests, mostly those of the Pharmacopœia; and the officinal preparations are always taken as the standard for comparison. The results given therefore although not stated as being chemically accurate, are practically so, and may be relied upon as far as they go.

The first article to be noticed in detail is,

Æther. Of the ordinary commercial Ether six specimens were examined. The specific gravities of these were ·733, ·745, ·774, ·744, ·747, and ·741. That of the officinal ether is ·750. Thus in strength, all except one are above the standard, and this one far below it, one of the specimens is far above the standard in strength, and is tolerably clean and good, well adapted to pharmaceutical uses though not to inhalation. Three others were not clean, and the two remaining ones were very unclean, and quite unfit for any ordinary use in connection with pharmacy. Thu not one specimen agreed with the standard in any two prominent qualities. While nearly all were above it in strength, all except one were below it in purity, or freedom from foreign hydro-carbons and odorous matters, whilst they were so different from each other that no uniformity of results could be expected from their indiscriminate use in pharmacy or medicine.

The prices paid for them in the order in which their specific gravities are given was 35 c., 37 c., 37 c., not known, 68 c., and 35 c. per pound, there being no relation whatever between price and quality, nor even between the price and strength.

Æther Fortior. This is the "Washed," or "Washed concentrated" Ether of the ordinary market, and a much more important article than the last, as it is this grade that generally is, and always should be used for inhalation.

Seven specimens were examined. The specific gravities were found to be ·726, ·728, ·731, ·731, ·728, ·735, ·742 and ·728, The officinal direction is that the s. g. shall not be above ·728, and the officinal specimen used for comparison was ·726. Four of the seven are of full officinal strength, and three very much below it, and not differing materially from the common Ether first mentioned. The officinal stronger Ether now under consideration, contains not over 6 or 7 per cent. of alcohol and water. The three inferior specimens contain 10, 12, and 19 per cent. of alcohol and water. These three specimens, beside deficiency in strength, were all below the standard also in cleanness,—two of them very much below it. Of the four specimens of standard strength, one was clean and good, and in all material respects fully up to the standard specimen with which it was compared. From having an alkaline reaction, and a slight odor of lime, it is probable that it was digested upon lime without having been afterward rectified. Notwithstanding this, it was an excellent preparation, and well adapted to any use. The three remaining specimens of full strength were all unclean ; one of them, however, was so near the standard that it may be considered as officinal though not very nice. The other two are far below the atandard and unfit for use. Two specimens of the seven therefore may be stated as being officinal and right in all important respects ; and five as unfit for use.

The above results, however, indicate a very important improvement in the ether of the market within the past two years, and lead to the inference, that a little general application of the very simple, easy tests of the Pharmacopœia, and a discrimination based upon the results, will soon produce an abundant supply of standard ether. For manufacturers can make it easily if they please to give it the necessary care and attention.

The prices paid for the specimens examined were, in the order in which their specific gravities are given, 55 c., 44 c., 42 c., 73 c., 50 c., 68 c., and the last unknown.

Chloroform. This is the Chloroformum of the old Pharmacopœia, and the Chloroformum Purificatum of the new, and probably the most important of all medicinal chemicals. Ten specimens were examined. The specific gravities of these were 1·492, 1·495, 1·494, 1·494, 1·494, 1·494, 1·494, 1·494, 1·494, 1·421. The officinal s. g. is 1·490 to 1·494, that of the officinal standard specimen with which these were compared was 1·495. Thus nine of the ten specimens were of full officinal density, and, judging from the bottle, label, and quality, seven of these were from the same manufactory. Not one of the ten was up to the standard in freedom from foreign compounds, though five of them were so nearly up to it as to be considered very good Chloroform. The remainder were less clean, though, with one exception, not very unclean. One specimen was very bad, unfit even for external use. The prices paid for these were 90 c., 1·00 c., 1·05 c., 1·25 c., 1·25 c., 1·35 c., unknown, unknown, 1·50 c., and 1·00 c. per pound.

Thus, although none of these came fully up to the officinal standard, five, or one-half of them are so near to it, that they may be stated as good Chloroform. Two of the remaining specimens, however, evidently from the same manufactory, are less clean, and would not pass as good Chloroform, showing a want of uniformity in quality in the same manufactory.

These results show a remarkable improvement in the quality of the Chloroform of the market within the last two or three years, and though it is not what it should be, they reflect much credit either on the manufacturers for improving their product, or upon those pharmaceutists, who, by discriminating in favor of a good preparation, or against a bad one, make a market for the one, and against the other. Perseverance in such a course will here, as in the case of ether, soon produce an abundant supply of an unobjectionable article. Neither the pharmaceutist, nor the physician, should ever permit chloroform to be used as an anæsthetic, without first subjecting it to the officinal tests.

Sweet Spirit of Nitre. The Spiritus Ætheris Nitrici of the old Pharmacopœia, and Spiritus Ætheris Nitrosi of the new.

Eleven specimens of this preparation, probably representing the entire supply of the market, were carefully and thoroughly examined, by a good process of assay, for the proportion of nitrous ether contained in them. The officinal preparation is a solution of nitrous ether in alcohol, and the solution contains 5 per cent. by volume of the nitrous ether, this being the medicinal agent, whilst the alcohol is added merely to dilute and preserve the ether. The s. g. of the officinal spirit is ·837 when freshly made, but increasing a little by age. The specific gravities of the specimens were ·893, ·906, ·876, ·898, ·934, ·852, ·847, ·852, ·858, ·848, and ·850. Not one of them being any where near the standard.

They severally contained the following percentage by volume of nitrous ether, namely, 2, 2, less than 1, 2·5, less than 1, 2·25, 2·3, 2·4, 1·5, 1·5, per cent. Thus not one single specimen contained as much as half the officinal proportion of nitrous ether, though three of them came pretty nearly up to half strength. Of the remainder, none exceed two-fifths, and five are below two-fifths, and do not average one-fourth strength. The prices paid for these were 17 c., 20 c., 20 c., 20 c., 25 c., 30 c., unknown, unknown, unknown, 55 c., and 40 c. per pound, and as usual, there is no relation between price and quality, that sold at 40 c., containing 1·5 per cent., and that sold at 17 c., containing 1 per cent. of nitrous ether. A little more than seven years ago, the Chairman of this Committee went over this ground in a similar manner, and published the results. These were about the same as those now obtained, showing that there has been no improvement whatever in the market for this article during that time. The preparation cannot be honestly nor properly made by the usual process, nor at the usual prices at which it is sold, and all manufacturers know this perfectly well, and yet go on, regardless of anything but the profits to be realized from their dishonesty; and pharmaceutists, though repeatedly appealed to on behalf of this and other preparations, knowingly continue to dispense them.

Compound Spirit of Ether. The Spiritus Ætheris Compositus of the Pharmacopœia, or Hoffman's Anodyne. Eleven specimens of this preparation were examined. Not one of these was officinal in any single respect, nor in any degree, and not one contained any true heavy oil of wine. One specimen professed, by the label, to be strictly officinal. This answered most of the officinal tests, and certainly contained some compound of sulphuric acid in small proportion, but whatever this was, it was not the officinal heavy oil of wine, nor in the officinal proportion. This, therefore, was probably a strictly fraudulent preparation, got up carefully and skilfully for the purpose of deception, and is well calculated to deceive, except that the delicate characteristic fruity odor of heavy oil of wine is absent. This, however, would only be likely to be detected by comparison, by those not very familiar with the officinal article. It is curious that this specimen appears to have been made by the same manufacturer as the very best specimen of Ether Fortior. Four of the other specimens contained light oil of wine enough to render water milky, and were so nearly alike in other respects, as to render it probable that they came from the same manufactory. All the specimens, except that specially alluded to above, were mere mixtures of dirty ether, generally in less than the officinal proportion, with dilute alcohol, and were probably made from the residue in rectifying ether. The prices charged for these were 75 c., 25 c., 25 c., 25 c., 30 c., 30 c., 38 c., unknown, unknown, 50 c., and 25 c., all except one being far below one-half of the neat cost of making the officinal article, and a great majority of pharmaceutists are fully aware of this fact.

Laudanum—The Tinctura Opii of the Pharmacopœia. It was thought by the Committee that it would be well to examine a representative from the class of Tinctures; and this one was selected for its primary importance, its simplicity, and the facility with which opium of good quality can always be obtained when desired. An accurate morphia assay is, however, one of the most difficult in the whole domain of ordinary chemical research, requiring more time and skill than was at the command of the Committee. It was therefore determined by experiment that a uniform process for precipitating all the alkaloids could be adopted and relied upon as giving a tolerably close comparison of the narcotic value of the specimens to which it was applied. Fifty cubic centimeters of the Standard Tincture of the Pharmacopœia yielded 0·604 grammes of mixed alkaloids by the process adopted. Eleven specimens, treated precisely in the same way, gave the following results, namely: ·424, ·347, ·343, ·308, ·486, ·468, ·480, ·427, ·340, ·338, and ·357. These figures indicate that one of the specimens is but just about half strength. Five are in the neighborhood of seven-twelfths, and the remaining five vary between eight and ten-twelfths of the officinal strength.

These preparations cost 1·00, 1·00, 1·12, 1·00, ·88, 1·06, unknown, unknown, unknown, 1·12, and 1·00 per pound.

Opium by the case, in the hands of the importers, has brought an average price of at least $8·50 per pound throughout the past year, and this opium in drying loses an average of 20 per cent. in weight, and there are but about 14½ troy ounces in the avoirdupois pound, while each pound of the officinal Tincture represents 1¼ troy ounces of dried and powdered opium. Therefore, at the neat case price of opium, the quantity represented in a pound of properly made tincture costs over one dollar. Now, upon the theory that druggists are generally honest, and are selling their tinctures below the neat cost of the principal ingredient, regardless of cost of menstruum, time, labor, and general expenses,—to say nothing of profits,—this preparation may be all right if the above results of examination be all wrong. But if this theory be too absurd for general credence, then these druggists and pharmaceutists are chargable in their practice with an amount of dishonesty which, in the shape of a more bold and manly variety of robbery, would be likely to restrict their opportunities of wrongdoing to the narrower sphere of the criminal prisons.

From this exhibition of the character of six prominent representative preparations from the market of the class to which they belong, it appears that although not one of them comes fully up to the officinal standard, yet that, by a liberal admission, two of the most important ones may be considered to be nearly right, and to be progressing in the desired direction of becoming entirely right. The three important ones of the remaining four, however, exhibit a low character discreditable alike to the professions of medicine and pharmacy, and to human nature in general; and those pharmaceutists whose moral perceptions at this day are left keen enough to appreciate the condition of their art, and whose energy is sufficient, certainly have a most enviable reputation and standing within their reach, by opposing the condition of things thus indicated, through what appears to be the rarely trodden path of moral rectitude. Let some of us then try how it will pay to be right where many are wrong, and try what the profits of such a new drug market will be.

The Committee comes now to consider briefly, in conclusion, some of the causes which influence the drug market to make it what it is, instead of what it should be.

The predominant, though remote, cause, is doubtless the moral tone of the community at large. When the fundamental principles of truth and honor become diluted and debased, we have therein the prime and fruitful source of all other adulterations and sophistications. There seems to be a growing tendency to this debasement at the present day, and it is to stem this current—to oppose this tendency, so far as it may be done or attempted in this body—that your Committee now addresses you at the end of its imposed task.

Governments and people appear to be losing all the keener perceptions of right, and all the nicer distinctions between right and wrong which kept the boundaries asunder. The Governments set examples, and the people follow. Or, the people form their model and base their Governments upon it. For example,—the General Government makes a law to prevent the importation of adulterated and spurious drugs, and then refuses to carry the law into proper effect, because it needs the offices created under the law to bestow on politicians as the price or profit of services by which the dominant parties gain and keep their ascendancy; and then, as if in derision of its own laws and penalties, itself floods the drug market with prize drugs, sold at auction to the highest bidder, without even the form of an inspection, and yet well knowing that these drugs were shipped for a hazardous venture by the lowest class of traders in the foreign markets whence they came, and that it must naturally be the refuse of the markets that is subjected to such risks. The Government sells its coffee grounds and condemned bread to the coffee, spice and drug mills, or at least covers with its mantle of patriotism and loyalty such acts of its agents, and occasionally pauses for a day of humiliation or thanksgiving, but never seems to think of its tortuous policies and equivocal precepts, the effect of which upon the moral tone of the community is transmitted through all the transactions of common life.

The more immediate cause of the difficulty under consideration is, that the interests of the drug market are directly at variance with the interests of the community in drugs, and that the community at large is not a judge of drugs as it is of bread, meat, muslin, and the articles of almost all other markets except drugs. The sole object of the drug market is to make money, while the sole object of the community is to have drugs of good quality. These interests being to a certain extent incompatible, and the channels through which they flow being continuous, there must be a point somewhere between them where they meet and neutralize each other. Along these channels of trade from the drug market to the bedside of the sick, stand the druggist, the pharmaceutist, and the physician. The pharmaceutist holds the middle ground, and the balancing and harmonizing of the two opposing interests are within his control. If he be found wholly or mainly on one side or the other, so the interest of that side predominates. The drug market, paying respect only to prices and profits, claims the pharmaceutist as belonging naturally upon that side of the line, and in a large majority of cases secures him and all his affiliations by the magic power of profits. Sometimes the physician also goes over, through the influence and interest of the pharmaceutist and the weakness of ignorance or dishonesty, and then the contest of opposing interests is at an end, all make money faster, and everything goes smoothly; the sick are subjected to bad medication as well as over medication, and the majority who survive look complacently back, while the dead never testify. When, however, as rarely happens, the pharmaceutist is found wholly in the interests of the sick, the physician is sure to be so too, and the opposing interest suffers, because fewer drugs are sold, and these of such grades as yield smaller profits.

The true normal condition, however, is that wherein the pharmaceutist divides his interest between the drug market and the sick, and brings an equally beneficent influence to bear on both. He is then still a merchant, and the prime object of his knowledge, skill, and industry, is to make money. But as he comes in direct contact and association with the physician and the sick, and gets a near view of the good and evil over which he presides, he should be willing to admit a moral responsibility to govern him in the exercise of his calling, without reference to profits or penalties; and this would keep him squarely up to the line of his important duty to his fellow-men. He who is honest for honor's sake, independent of the hope of reward or the fear of punishment, is upon the surest ground that a lifetime offers to man. The roads to wealth and distinction are open to him equally with all men; but he has a guide which renders them far more pleasant to travel.

Signed on behalf of the Committee,

E. R. SQUIBB, Chairman.

E. R. Squibb,	Brooklyn,
W. Procter, Jr.,	Philadelphia,
S. M. Colcord,	Boston,
Chas. Bullock,	Philadelphia,
A. P. Sharp,	Baltimore,

Committee.

Brooklyn, Sept., 1863.

SPECIAL REPORTS AND ESSAYS.

ON THE RELATIVE ACTIVITY OF AMERICAN AND EUROPEAN ACONITE ROOT.

BY WILLIAM PROCTER, JR.

At the Meeting of the Association held in Philadelphia, September, 1862, the following query was accepted by me: "What is the relative activity of the root of Aconitum napellus grown in the United States and that imported from Europe, based on their yield of aconitia, and what objections, if any, exist to the economical culture of the plant in the United States." Soon after the meeting adjourned, a letter was addressed to Messrs. Tilden & Co., of New Lebanon, New York, who cultivate aconite for making the extract, requesting their aid in obtaining a sufficient quantity of the American grown root, to make the comparison. The very early setting in of the winter interfered with their getting the root, and it was not until early spring, when the frost left the ground, that they could have it gathered. It was then carefully dried. The quantity received was rather more than a pound avoirdupois. So carefully had the roots been removed that the fibres were mostly remaining; the main roots varying in diameter at the caudex from a quarter to three-quarters of an inch, and from three to six inches in length, including the tap root. The color of the epidermis is purplish brown, inclined to black on the older portions, and the odor is rank and somewhat like that of opium.

After carefully drying the aconite it was ground to moderately fine powder. 5000 grains of this were macerated for two weeks,* in sufficient alcohol, sp. gr. ·835, to moisten it, then packed into a glass percolator, and slowly percolated with alcohol until five pints of tincture had passed. The percolate was placed in a retort, and, by aid of a water bath, four pints of alcohol were recovered, and the residue evaporated to four fluidounces. To this a fluidrachm and a half of diluted sulphuric acid mixed with a fluidounce of water was added, and the whole evaporated to two fluidounces and a half. The residue was syrupy in consistence, with oleo-resinous globules floating on it, with a decided acid reaction. The aconitia being in the state of sulphate, and hence insoluble in strong ether, the liquid was agitated with two fluidounces of washed ether to remove the oleoresin; after decanting, the washing was repeated. The aconite liquor was now treated with an excess of solution of ammonia to liberate the aconitia, and the alkaline mixture washed by agitation and decantation with three separate portions of ether, of two fluidounces each. The ethereal liquids, united, were evaporated spontaneously in a tared capsule: the residue weighed sixty grains, and was dark colored, strongly alkaline and not entirely hard, owing to a little oleoresin present that had not been completely removed by the preliminary washing. The impure mass was mixed with a fluidounce of distilled water, and diluted sulphuric acid carefully dropped in, with the application of heat, until the acid ceased to be neutralized, and the liquid remained slightly acid. A residue of dark brown oleoresin remained. The fact of this occurring shows the importance of well washing the solution before separating the aconitia. The solution of impure sulphate of aconitia was now filtered and the filter carefully washed. The filtrate weighed 585 grains troy. To ascertain the aconitia strength of this liquid, it was assayed by the process of Prof. F. F. Mayer, (Amer. Jour. Pharm., vol. xxxv. p. 23,) with iodohydrargyrate of potassium. Five grains of this solution diluted, required sixty-eight grains of the test liquor, a preliminary trial having been made to get an idea of the strength of the solution. Then as 68 grs. of test liquor represent ·36312 gr. of aconitia present in 5 grains of the solution of sulphate of aconitia, therefore 585 grains equal 42·483 grs. of aconitia from 5000 grains of the root, or nearly 0·85 per cent. ($585 \div 5 = 117 \times \cdot 36312 = 42\cdot 483$.)

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* This long maceration was rather accidental than intentional.

The residual liquor after the extraction of the aconitia, was then treated with an ounce of chloroform and a little more ammonia, but owing to the ether present and the density of the extractive solution it did not separate. To effect its separation, sufficient ether was added to make the mixed chloroform and ether lighter than the extractive solution, when it was decanted, evaporated, and heated with a fluidounce of water. The addition of diluted sulphuric acid liberated a bulky hydrated oleoresinous precipitate which, on standing, gradually lost its water of hydration and assumed a soft consistence, staining paper. The liquor from this precipitate, with its washings, was tested for aconitia, and 4·065 grs. more of the alkaloid indicated, making the whole according to Mayer's test 46·56 grs.*

European Aconite Root.

A parallel experiment was now tried with European aconite root of German origin; 5000 grains of this root, in moderately fine powder, were treated in a similar manner with alcohol sp. gr. ·835. The liquor concentrated to three fluidounces mixed with a quantity of diluted sulphuric acid, equal to that employed in the first experiment, and then washed with ether until the latter ceased to be colored. The aconitic liquid separated from the ether was mixed with an excess of ammonia and again treated with ether till exhausted. The ethereal liquids left, on evaporation in a capsule, 30 grains of soft brown residue strongly alkaline to test paper. This, when treated with a fluidounce of water, and sufficient diluted sulphuric acid, all dissolved but a trace, showing that the more thorough preliminary washing in this instance had removed all the oleoresin. The impure solution of sulphate of aconitia weighed 686 grains. Five grains of this required 30 grs. of test liquor to saturate it. $686 \div 5 = 137 \times 0{\cdot}1602 = 21{\cdot}94$ grains.

The residual aconite liquor was treated with chloroform, ammonia and ether, as in the other experiment. A few grains of soft extract only were obtained, exhibiting, when properly treated, but a faint cloudiness with the test solution for aconitia.

The ethereal washing liquids containing fixed oil and resin were separately evaporated. The product from the American root, amounted to 114 grains; whilst that from the European root equalled 180 grains.

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* The reader will observe that Prof. Mayer's test indicates twice as much aconitia as was obtained by experiment. I am unable to account for this, unless by inferring an error in Prof. Mayer's numbers.—W. P., Jr.

The two solutions of sulphate of aconitia were now treated to isolate the alkaloid. That from the European root was carefully precipitated by ammonia, the precipitate collected on a filter, washed and dried. It weighed *ten* grains.

The solution from the American root was then precipitated by ammonia, and the liquid and precipitate washed with ether to remove the aconitia. The ethereal liquid, on evaporation, left the aconitia somewhat gelatinous, and on standing, decided evidences of crystallization were manifested. Most of the alkaloid dried in a resin-like form of a yellowish color, which, in powder, had a light straw-color, and weighed 21 grs.

It now remains to remark on the feasibility of cultivating aconite root in the United States with a view to commercial supply. The following statements are derived mainly from a letter from Messrs. Tilden & Co., of New Lebanon, Columbia county, N. Y., who for years past have cultivated this plant for the leaves. They raise aconite from the seed sown in drill; after the first year, the plants are separated and set out in rows, nine to twelve inches apart, in good soil. It has been found most successful to reset one-third of the plants every year. When two years old the tops may be used in medicine, but the roots should not be employed until they are three or four years old. The specimen submitted with this report is not so large as the European root of commerce. One of the average roots weighs only forty grains. Supposing that forty thousands of these were raised on an acre of good soil, $(40000 \times 40 \div 7000 = 228)$ the produce would be only 228 pounds avoirdupois. But it is quite probable that, with more age and favorable conditions, the yield would be at least twice as large, or about 500 pounds per acre, as in the sample of European Root used the roots averaged nearly 80 grains.

Aconite has fewer enemies among the insect tribes than any of the ordinary narcotics or sedatives, not being preyed on by the slug, so destructive to hyoscyamus and belladonna. The soil should be deep and well manured with animal manure, and the plantation kept clean. The roots should be dug late in the fall, and then thoroughly dried.

From the foregoing parallel experiments, it would appear that Aconite roots grown in this country are stronger in aconitia than are the commercial European roots. The sample of European Aconite used was, so far as could be judged by external appearance, a fair specimen, and medicinally had given satisfaction. In all the papers that I have examined, from that of the discovery of aconite by Brandes, about 1821, to that of Geiger and Hesse, in 1832, and Von Planta, 1852, none give the per centage strength of aconite root, and hence I have no data to decide upon the normal per centage of the drug. The experiments were conducted with entire fairness, and as nearly parallel as is usual in such investigations.

Philadelphia, Sept. 5th, 1863.

ON THE COMPARATIVE ADVANTAGES OF THE LEAVES AND SEEDS OF CONIUM MACULATUM.

BY GEORGE C. CLOSE.

"What are the advantages of the seeds of the Conium maculatum, as regards uniformity of medical power, as a basis for the medicinal tincture?"

I presume it was intended in this question to ask, what are the advantages of the seeds of the Conium over the leaves of the same plant, as a basis for the medicinal tincture? Accordingly I shall so treat it.

To enable me to answer this question, I endeavored in the first place to obtain some leaves which had been recently gathered and dried.

As it was too late in the season, after the Association adjourned, to gather the leaves, my only resource was to apply for them at the usual places in New York, from which the retail druggists obtain their supplies of herbs.

I was, however, unsuccessful, as, although I applied for them at intervals during several months, I could not obtain any Conium leaves newer than the crop of 1861 at either of the regular herb stores in the city of New York.

There is so little demand for the article, that I suppose the dealers, not having sold out their old stock, did not think it worth while to have any gathered in 1862. Under these circumstances it might be difficult to comply with the directions in the Pharmacopœia, to use the recently dried leaves to make the officinal tincture.

I, however, procured some of the leaves of 1861, and carefully prepared a tincture from them according to the officinal formula. I also procured some of Geo. Allen's leaves, imported in 1862, and prepared a similar tincture from the leaves just taken from the bottle in which they were imported.

In August, 1863, I made a tincture from the leaves obtained from the plant, and carefully dried by myself.

In September, 1862, I made a tincture from Conium seeds recently gathered and dried; and in August, 1863, I prepared one from seeds gathered in 1861, and kept in a wooden box in a garret, and without any special care; and also one from seeds imported from Germany, but of what year's crop I could not ascertain.

These various tinctures, after some manipulation to get rid of the alcohol and isolate the active principle, were tested for Conia by the method recommended by Prof. Mayer, page 23 of the American Journal of Pharmacy for January, 1863.

The following table will show the result for each ounce of tincture employed, in decimals of a grain of the Conia supposed to be present:

	Conia.
Conium leaves, American, 1 year old,	0·0000
" " " Recent,	0·0373
" " " English (Geo. Allen's),	0·0107
Conium seeds, recent,	0·1426
" " two years old,	0·1411
" " German,	0·1203

From the above it would appear that Conium leaves one year old, obtained from the sources from which most retailers in New York usually get their supply, are worthless; that recent leaves are about three and a half times as rich in Conia as imported leaves (Geo. Allen's), but only about one quarter the strength of the seeds.

That recent seeds are about one per cent. stronger than those which are two years old, and about 15 per cent. stronger than German ones.

The German seeds, however, appear to have been gathered when quite ripe; whereas the American were gathered when they were fully formed and plump, but retained their green color. This, I think, is the proper time to gather them.

It would seem, then, if these results can be depended on, that the advantages of Conium seeds over the leaves are their greater activity and uniformity of strength, and their less liability to lose their active properties by keeping.

This agrees also with the only authorities I have been able to consult, and also with the opinions of physicians who have used the Conium extensively in their practice for many years. My father used it more than thirty years, and, although he continued to use the leaves and small stems of the green herb, yet he came to the conclusion, many years ago, that the seed was the only part of the plant worth drying.

Dr. M., of Norwalk, Conn., who has also been in the habit of using Conium extensively in his practice, has come to the same conclusion. He informs me that he has tried to preserve the leaves by curing them himself, enclosing them in a bottle, and keeping the bottle in a dark place; but even when so kept, he considers them worthless after a year or two.

This is all I have to communicate in direct reply to the question, but a few desultory remarks on the subject of the Conium plant may not be uninteresting.

I have found great difficulty for several years in procuring a supply of Conium seeds in the vicinity of New York, in consequence of the depredations of a species of Aphis, which attacks the plant just as the seeds begin to form, and so exhausts it of its juices, that the seeds do not fill out, but turn black and have a shrunken appearance. These seeds still appear to be active medicinally, but they are extremely light, compared with the sound ones. They will not germinate if planted, and in consequence the plant has become almost extinct in some localities where it was formerly abundant. This is the case in Norwalk, Conn. There is an interesting tradition connected with its introduction into this place.

At the taking of Stony Point during the Revolution, Captain Betts, of Norwalk, commanded the forlorn hope. There were two German physicians taken prisoners during the engagement. Dr. Knight, of Norwalk, then a young man, became acquainted with these men, and found them very intelligent and well informed in their profession. After their return to Germany, the Doctor sent them a present of a number of kinds of seeds of medicinal plants belonging to this country, and among them those of the stramonium, which plant he not only recommended as being medicinal, but ornamental. In consequence, as the plant spread over this part of Germany, it was called the American Morning-glory.

In return for this, the Germans sent out a number of kinds of seeds, including those of the St. Johnswort, the Colchicum, and the seeds of the Conium maculatum, which plant they recommended as a remedy for cancer. The plant was in this way introduced into the town, and became known as Knightweed,—a name it still bears in Norwalk, although I cannot say that the Doctor's memory has been very much blessed by the people there, in consequence of his agency in introducing what they consider as a great pest.

With regard to the notion which has prevailed for a very long period, that the Conium is a remedy for cancer, I have myself seen some apparent confirmation of its truth. Dr. M., of Norwalk, also informs me that, although after extensive trials of it in this disease, he has seen very few actual cures, it has never failed to alleviate the sufferings in a most remarkable manner,—its influence being very far superior to that of opium in any form.

In Pareira's Materia Medica, vol. ii. p. 495, it is stated that Boyle has collected, from various writers, forty-six cases of cancerous diseases said to have been cured, and twenty-eight ameliorated by the use of hemlock.

Some very remarkable cases of cures of undoubted cancers may also be found related in the Am. Jour. of Med. Science, vol. ix. p. 77.

It is probable that some of the failures of success in its use in this, as in other diseases, have resulted from the inertness of the preparations of Conium used, rather than from the want of power in the plant itself.

This, of course, makes it more important that the most active part of the plant, and that least liable to deteriorate, should be gathered for use; and this I think is undoubtedly the seed.

ON THE SPECIFIC GRAVITY OF AQUEOUS SOLUTIONS OF TARTARIC ACID.

BY JOHN M. MAISCH.

At the meeting of our Association in New York, a question was propounded to me having for its object to ascertain the chemical and pharmaceutical relations of tartaric acid and the medicinal tartrates. The Association, I supposed, would expect a series of experiments with regard to the solubility, chemical behaviour, composition, and commercial purity of these preparations, and likewise the most suitable forms of exhibiting them as remedial agents. It has been my intention to enter fully into these details, and, as I informed the Association last year, I have commenced the experiments. But owing to my numerous duties, and particularly since my removal back to Philadelphia, I have been unable to make any further progress. I therefore take the liberty to report at present merely on the specific gravity of aqueous solutions of tartaric acid of different strength, which is the only subject about which my experiments are concluded, promising to continue my investigations and report at an early date.

Tartaric acid dissolves, according to Gmelin (Handbook), in $\frac{7}{13}$ parts of cold, and in less boiling water. Schlossberger says, it dissolves in $1\frac{1}{2}$ parts of water; and according to Kolbe, it requires $1\frac{1}{2}$ parts of cold, and $\frac{1}{2}$ part of hot water, for its solution.

If two parts of powdered pure tartaric acid are added to one part of water of 24° C. (75·2° F.), and briskly stirred, the temperature falls to 12·4° C. (54·3° F.), and a considerable portion remains undissolved. The decrease of temperature under these circumstances is 11·6° C., or 20·9° F.

686 grains tartaric acid were treated in this manner with 328 grains of water. After the temperature had reached its lowest point, solution was effected by heat, and the liquid left loosely covered over night. Next morning, 9 grains were lost by evaporation; the solution with the crystals weighed 975 grains. At a temperature of 22° C. (71·6° F.), the clear solution was decanted, and the crystals rapidly dried between porous tiles, after which they weighed 220 grains; the full weight of the solution was therefore 975—220=755 grains, and it contained 656—220=436 grains tartaric acid, and 755—436=319 grains water. By calculating from these figures, it is found that 100 parts of water dissolve at 22° C. 136·677 parts of tartaric acid, or 100 parts of the latter, require 73·142 parts of the former, or nearly ¾ its own weight. This solution could be cooled down to 16° C., and its specific gravity taken without crystallizing; but by retaining it at this temperature, crystals were slowly formed.

By dissolving with agitation 55 parts of powdered tartaric acid in 45 parts of water, the temperature was reduced from 22·8° to to 11·8° C.=11° C. (19·8° F.); with equal parts of water and tartaric acid, the thermometer fell from 23·4° to 12·9°=10·5° C. (18·9° F.)

The following table exhibits the specific gravity at 16°C. (60·8° F.) of aqueous solutions, containing from 1 to 57·75 per cent. tartaric acid. The density of these solutions, it will be observed, increases for every 2·5 per cent. from ·0115 to ·017, and consequently the specific gravity of the dry acid is somewhat higher in the concentrated solutions than in those less concentrated. For comparison with my results, I include in the table from Gmelin's Handbook the results of Richter, (marked R.,) and Osann, (marked O.):

Solution containing per ct. $\bar{T}$.	Sp. Grav.	Difference with the preceding 2·5 per ct. $\bar{T}$.	Sp. Grav. by calculation.
1	1·0044		
1·63	1·008 (O.)		1·0083
2·5	1·0114	114	
5	1·023 (O. & M.)	116	

Solution containing per ct. $\overline{T}$.	Sp. Grav.	Difference with the preceding 2·5 per ct. $\overline{T}$.	Sp. Grav. by calculation.
7·5	1·035	12	
8·33	1·039		
9·06	1·04 (R.)		1·0425
10	1·047	12	
12·5	1·059	12	
14·28	1·068 (O.)		1·0676
15	1·071	12	
16·66	1·079		
17·45	1·08 (R.)		1·0828
17·5	1·083	12	
20	1·097	14	
22·27	1·109 (O.)		1·1093
22·5	1·111	14	
24·98	1.12 (R.)		1·1249
25	1·122 (O.)		
	1·125	14	
27·5	1·139	14	
30	1·153	14	
30·76	1·155 (O.)		1·1572
32·06	1·16 (R.)		1·1645
32·5	1·167	14	
33·33	1·171		
34·24	1·174 (O.)		1·1768
35	1·181	14	
37·5	1·195	14	
39·04	1·20 (R.)		1·2036
40	1·208 (O.)		
	1·209	14	
42·5	1·224	15	
45	1·240	16	
46·03	1·24 (R.)		1·2462
47·5	1·255	15	
50	1·271	16	
51·42	1·274 (O.)		1·2801
52·5	1·287	16	
52·59	1·28 (R.)		1·2876
55	1·304	17	
57·75	1·325		
58·75	1·32 (R.)		
64·56	1·36 (R.)		

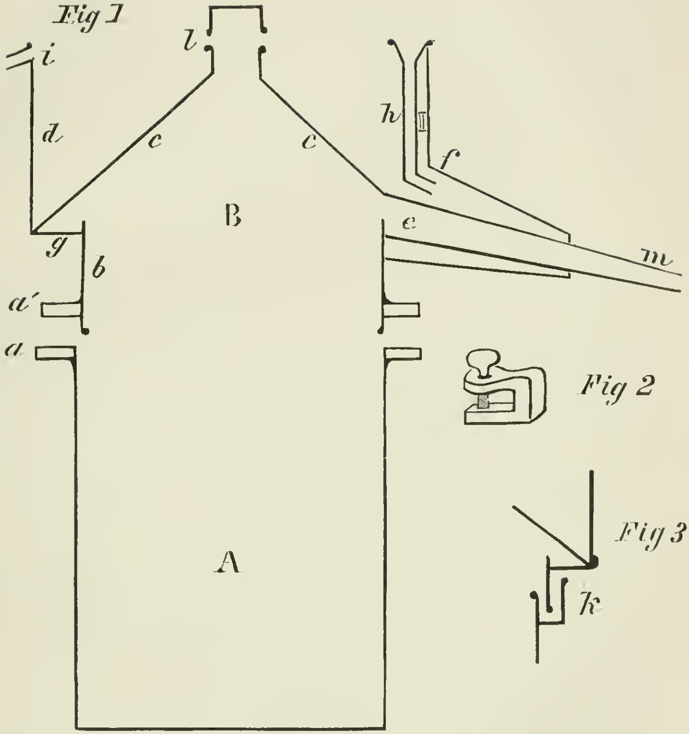
It will be observed that the results as obtained by me by actual experiments as well as by calculation, agree closely with those of Richter and Osann for all acid solutions of less than 46 per cent. Above that strength the discrepancy is somewhat greater. I have been unable to obtain from a supersaturated solution at 16° C. a solution containing more than 57·75 per ct. acid.

ON A STILL FOR APOTHECARIES.

BY WILLIAM PROCTER, JR.

At the meeting of our Association in 1862 the following question was proposed and accepted : "What is the best form and material for a still for use by pharmaceutists, of from two to four gallons capacity, appropriate for being heated by gas or stove heat, and which shall be suitable for the recovery of alcohol in making pharmaceutical preparations."

In replying to this query, I will reverse the order and speak of the material first. Tinned copper is, by far, the best material for a still, lasting much longer and capable, by retinning, of being frequently restored to its original condition ; but owing to the high price of copper, the cost forms an objection that would prevent the general use of the apparatus. Tinned iron is, therefore, the material here suggested, which, with due care, will last a long time for liquids which do not attack the metal. The strongest objection to it is, perhaps, the fact that astringent solutions gradually work their way through the imperfections of the tinned surface, and are blackened by contact with the iron beneath. As the most expensive portion of the still is its condensing head, which does not come in contact with the liquid, a compromise may be made in regard to material by constructing the boiler of copper, and the condenser of tinned iron. In regard to the form of the still, the accompanying diagram will convey a correct idea to the reader, but to illustrate it to the members present I have had a tinned-iron still made, which will be better understood by a few explanations of the diagram. This still consists of two distinct parts, the boiler, A, and the condensing head, B. The form is cylindrical, 12 inches deep, 10 inches in diameter, with a tinned wrought iron flange, *a*, an inch wide, and a quarter of an inch thick. A similar tinned iron flange, *á*, is attached to the base of the head, which fits on the flange of the boiler, and forms a tight joint by means of twine or gum-packing, when held together with clamps. Rising from this is a cylinder of tinned iron, *b*, three inches high, which is surmounted by the conical condensing surface, *c ;* united by means of a horizontal ring with the cylinder before mentioned. On the outside of the cone, and rising from its base, is another cylinder, *d*, which forms the receptacle for the refrigerating water. Passing out from the conical condenser is a tubular neck, *e*, ten inches long, surrounded for three-fifths of its length with a jacket, *f*, which opens into the receptacle for water. The neck is attached to the head so that all the liquid that condenses on the inside of the cone and is caught in the gutter, *g*, at once runs into the neck, and is thereby conveyed to the receptacle or receiver. Attached to the inside of the upper cylinder, immediately above the neck, is a funnel tube, *h*, which bends below and projects into the jacket, above the neck. On the side opposite, near the top, the cylinder is penetrated by the tube *i*, which is intended to carry off the heated water. The apex of the cone is surmounted by a short tubulure of tin an inch and a half in diameter, which is ordinarily closed by a tin cap slipping over it, and which may be closed more effectually by a good cork. In 1848, in the American edition of Mohr and Redwood's Pharmacy, the writer described under the name of " Pharmaceutical Still," an apparatus analogous to the above, which, however, differed in two important particulars: 1st, in having a water joint as at *k*, fig. 2, instead of the iron flanges ; 2d, in not having the jacket around the neck, which is really the greatest improvement in the present still. The chief objections to the water joint are, *first*, that it will not admit of any elasticity in the internal atmosphere of the still without forcing out or sucking in the water in the joint; 2d, the contents of the boiler cannot be removed until the rim is emptied by a syphon, and then in pouring out the contents it gets into the rim ; and 3d, when the fluid rises by rapid ebullition it gets into the joint, and is diluted or spoiled as the case may be.



ONE-SIXTH FULL SIZE SECTIONAL VIEW OF

PHARMACEUTICAL STILL AND CONDENSER

—BY—

WM. PROCTER, Jr., Philadelphia.

It now remains to speak of the manner of using this alembic, and of making the joint tight. After charging the boiler the operator extends a piece of moist, loose textured, coarse twine, around the centre of the iron flange, crossing the ends. The head is then placed in position, and by the aid of five clamps, see fig. 2, the flanges are compressed strongly together, when the twine forms an air-tight joint; of course, a ring of rubber would be more elegant, but scarcely more effective, and by no means so convenient and economical. This simple idea I owe to a recent visit to the laboratory of Dr. E. R. Squibb, who gave me permission to use and describe it. When in operation, the boiler should be supported in a jacket, as, for instance, the top of a common cylindrical stove, by means of a ring of sheet iron pressing against the lower side of the clamps. A current of cold water is allowed to run into *h*, which carries it directly to the neck, where the largest amount of vapor is to be condensed, and which should be kept cooler than any other part of the condensing surface. The tubulure at *f* enables the operator to inspect the interior, by means of a glass or wooden rod. A gum tube will convey the waste water away from *i*. In distilling very volatile liquids a Liebig's or other condenser may be attached to the neck, at *m*, if it is deemed advisable. Gas heat is admirably adapted for this still when used with a jacket, and when the distillation of alcoholic solutions is carried nearly to dryness, a water bath jacket may be employed. Of course, in using this still for recovering ether, every precaution should be taken as regards tight joints and effectual condensation—using a water bath heat, and ice water in the condenser, the neck being luted to the receiver, which, of course, should be ventilated by a small opening to prevent accidents. The tubulure, in this case, should be well closed with a good velvet cork. The apparatus exhibited cost eleven dollars, but this great price arose from the clamps and tinned flanges, which, were the apparatus much used, could be made much more cheaply. This still was constructed by Mr. Isaac S. Williams, 726 Market street, Philadelphia.

Philadelphia, Sept. 5th, 1863.

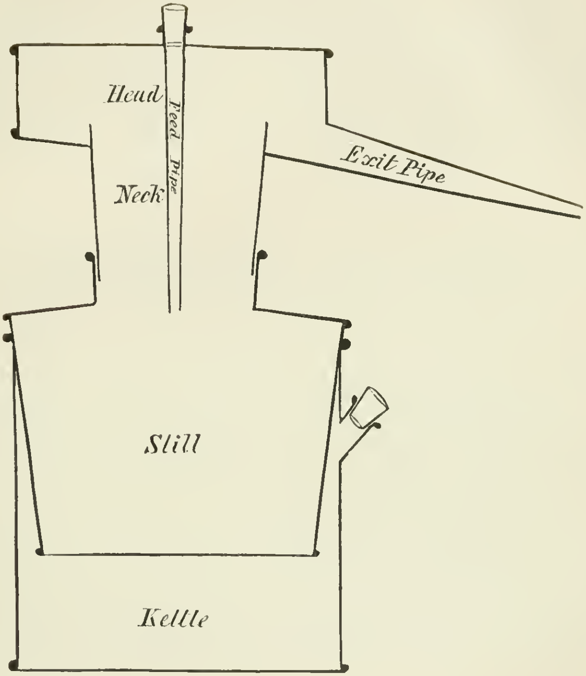
ON THE MOST DESIRABLE FORM FOR A STILL FOR PHARMACEUTICAL PURPOSES.

BY THOS. S. WIEGAND, PHILADELPHIA.

Among the subjects to be reported upon at the meeting of our Association in 1862, was the most desirable form for a pharmaceutic still.

As the engagements of the member to whom it was referred prevented his reporting upon it, the subject was dropped at his request; this is especially to be regretted at the present time, as the high price of alcohol, and the introduction of so many fluid extracts into the Pharmacopœia, renders it more important than ever for the trade to recover it wherever practicable to do so. It was hoped by those of us who are familiar with the thorough manner in which Dr. Squibb does whatever he undertakes, that we should have a plan from him for a still that would combine the various requirements of our trade in an eminent degree. Without claiming to have succeeded in producing the most desirable apparatus, I think the experience of more than two years with one very similar to that here described, enables me to recommend it as being very nearly what is required by the great majority of pharmaceutists. In arranging its several parts, the facility of cleaning it has been regarded as very important, and it is so designed that any good tinsmith can make it, while the usual pattern of copper stills requires a coppersmith to execute them.

The whole apparatus is made of sheet copper thoroughly tinned inside, the mouth of the still being large enough to admit the hand to be introduced to clean it; the neck is made with a taper, so that it will close tightly, and of sufficient length to prevent the foaming, which frequently occurs, rendering the distillate impure; the neck is continued up into the head of the still a quarter of an inch to prevent the condensed liquor which forms in the head of the still flowing back into the still; the feed pipe enables the operator to continue the process with less interruption than would occur if the head were removed each time a new charge was added. As nearly all the use of the still in the hands of the apothecary is to recover alcohol from various preparations, it is desirable



ONE-FOURTH FULL SIZE SECTIONAL VIEW OF

STILL

FOR PHARMACEUTICAL PURPOSES.

—BY—

T. S. WIEGAND, Philadelphia.

to have a safe means of applying heat: this can be done with great facility by means of a kettle, the diameter of which is a little less than the still at the shoulder, so that the still will form a close junction with it and prevent the free escape of steam. A still of this kind and size here described can be made for about four and a half dollars, the kettle for about two dollars more. It is far more economical to have them all made of copper tinned, as there is very little wear upon copper utensils while the common, substitute, sheet tin, corrodes so quickly that in a short time a greater expense is incurred than would be required for copper vessels.

ON THE COMPARATIVE VALUES OF THE COMMERCIAL VARIETIES OF BUCHU LEAVES.

BY P. W. BEDFORD.

"What are the actual values of the commercial varieties of Buchu Leaves, based on the proportion of volatile oil they will yield?"

There are found in commerce, three varieties of Buchu, known as long, medium, and short. Their monetary value is in the same order, the long Buchu (at the present time) being worth 80 cents per lb., while the short Buchu can be had for 30 cents. The second commercial variety known as medium has not been in the market in this city for several months. Owing to this fact, my experiments have been confined to the two varieties, long and short.

The long Buchu, known as Barosma serratifolia (Willdenow), is the variety most highly esteemed, but my experiments show that it contains much less volatile oil than the Barosma crenulata or short-leaved Buchu. These experiments have been made on quantities varying from 9000 to 15,000 grains of the leaves. My experiments with the long-leaved Buchu gave respectively 0·62, 0·68, 0·64, and 0·71 per cent., being an average of 0·66 or two-thirds of one per cent.

Similar experiments with the short-leaved Buchu gave respectively 1·60, 1·16, 1·07, and 1·02 per cent., being an average of 1·21, or one and one-fifth per cent.

The only recorded analyses of Buchu leaves I have met with are those of Brandes, made in 1827, and another made the same year by Cadet de Gassincourt.

Brandes' analysis sets the amount of volatile oil at 0·88 per cent., that of Cadet de Gassincourt at 0·665 per cent. The variety of Buchu is not stated.

In Stillé's Materia Medica and Therapeutics, vol. 2, p. 673, it is stated that Buchu yields seven per cent. of volatile oil, which statement is evidently an oversight or misprint.

New York, August, 1863.

ON THE PRESERVATION OF VOLATILE OILS.

BY ALFRED B. TAYLOR.

While the importance and the difficulty of preserving the volatile oils from the deterioration to which they are all so prone are universally recognized by the pharmaceutist, the two great destructive agencies by which they are beset are so universally diffused, that there seems to be little that can be suggested beyond what is familiarly known, calculated to secure the great desideratum. So far as we are at present aware, the only decomposing influences to which they are usually exposed, and by which they are likely to be attacked, are atmospheric oxygen and light, (to which latter might be added its natural analogue—heat.)

Whether these agents are merely co-operative, or whether they are independent,—that is, whether heat and light merely present more favorable conditions, whereby the affinities of the air for the oils are enhanced and accelerated,—or whether they are capable of exerting their own specific action in disturbing the primitive structure of the oils themselves, has not been definitely established, and would require a course of tedious and difficult experiment certainly to determine.

Inasmuch as the bottles from which the apothecary must dispense these oils are necessarily uncovered very frequently, and exposed to the air almost constantly, it is evidently of the first importance that this evil should be reduced to a minimum by using bottles of the smallest practicable size, containing not more

Fig 1

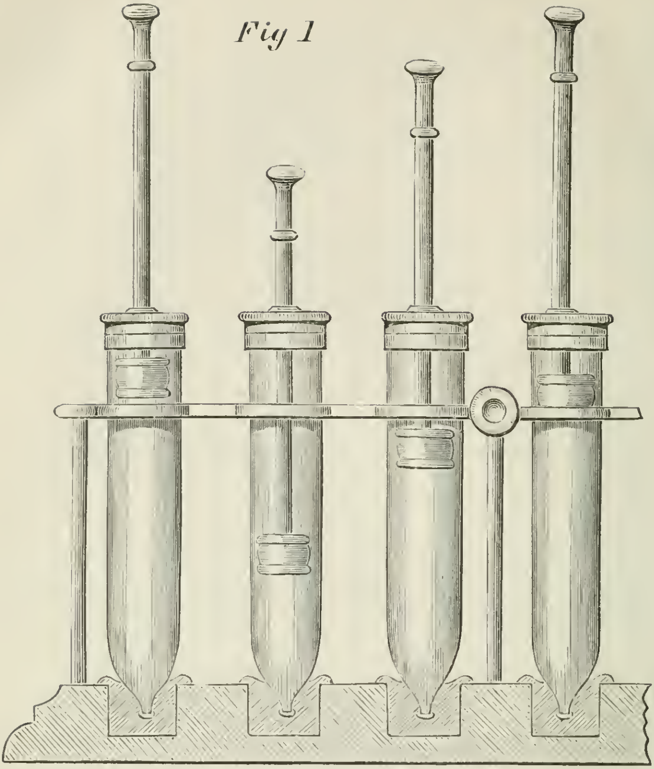


Fig. 2.

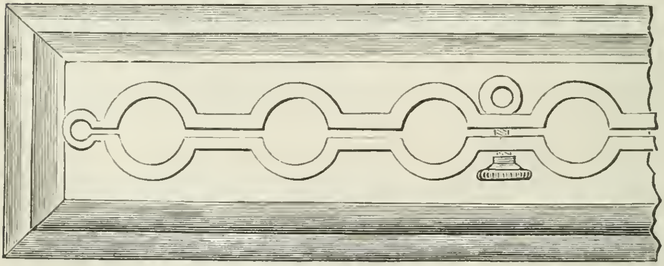


Fig. 1. VIEW OF SYRINGE BOTTLES IN POSITION, WITH THE BASE OR PEDESTAL SHOWN IN SECTION.

Fig. 2. TOP VIEW OF PEDESTAL AND SUPPORTING FRAME.

than the retail supply for a week or so, and that these should be very closely stopped; or, in other words, that the bulk of any one of the said oils in store should be distributed among a number of small receptacles, so that each one may be exposed to opening for but a short period, and at the same time may expose, within the receptacle, but a small surface, to a small volume of inclosed air. If this expedient of division were more generally resorted to, there can be no doubt that the apothecary would have the satisfaction generally of dispensing a much "fresher" article, and would in that satisfaction be fully compensated for the increased trouble or expense attendant on the multiplication of containing vessels, and their storage bulk. It would perhaps facilitate, and more certainly ensure, this desirable result, if the wholesale druggist, importer, or manufacturer, should originally put up the various oils in packages of bottles of small capacity, instead of those of larger bulk.

The only method that suggests itself of entirely excluding air from the dispensing vessel, would be to employ glass syringe bottles as the containing vessels; the points of the syringes to rest in conical seats of glass (forming the base or pedestal,) and to which they should be accurately fitted by grinding. By this arrangement, moreover, the first tendencies to form sediment would be checked or removed, by the lower portion of the oils being the earliest used. How far this device presents a practicable expedient, could perhaps be satisfactorily determined only by actual trial. It is hardly necessary to remark that, in any case, the bottles should be perfectly dry, as water appears to oxidise the oils quite as readily as air. An incidental advantage of the use of syringe bottles is the facility presented for graduation, whereby the quantity on hand is directly indicated, and the necessity of an intermediate measure entirely avoided.

In regard to the action of light, it has long been recognized that the volatile oils are much better preserved by being kept in a dark as well as in a cool place. As an obvious expedient, blackened or opaque bottles have been used, and with very decided advantage. One inconvenience, however, attending the use of non-transparent vessels, is the impossibility of observing the condition of the contained oil or other fluid,—a matter sometimes very desirable.

Inasmuch as the orange rays of light (or those of the least refrangible end of the solar spectrum,) have been found to exert no actinic action, it is thought that the employment of glass bottles of this color would present the desideratum of entirely protecting the oils from the chemical influence of light, and at the same time of allowing their amount and appearance to be distinctly perceived. Of course, all those preparations of the essential oils liable to change, such as orange-flower water, rose water, &c., would be equally well shielded, and would, indeed, be better preserved than by the means usually employed to exclude light. The means here suggested would be equally advantageous for the preservation of all those chemicals particularly prone to deterioration from exposure to light.

It will perhaps be considered unnecessary to advise that, (in the absence of bottles of the above description,) all essential oils should be kept in a dark closet,—as it is only saying what everybody knows,—still, since everybody does not at all times practise what he knows to be best, it is earnestly recommended to every apothecary, who wishes to satisfy himself or his customers, to try the expedient, and he will be amply repaid for any trouble or inconvenience resulting therefrom.

ON THE THERAPEUTICAL PROPERTIES OF SANGUINARINA, AND ITS ACETATE AND SULPHATE.

BY ROBERT P. THOMAS, M. D.,
Professor of Materia Medica in the Philadelphia College of Pharmacy.

Having been requested by the Association to prepare "an essay on the actual merits of Sanguinaria as a therapeutic agent based on trials with Sanguinarina and its salts, and its claims to a prominent position in the Materia Medica," I submit the following as the results of a large number of observations made by myself, or by other gentlemen at my request. Before stating my own experience, however, it is manifestly proper that a brief notice should be given of the recorded labors of others, in order that a just estimate may be formed of the true characters of this valuable drug.

In 1803, Dr. Wm. Downey, of Maryland, presented an inaugural thesis on the Blood-root, the root of which he designates as a powerful emetic in doses of twenty grains, causing much irritation of the fauces, then warmth in the stomach, increased force and frequency of the pulse, followed by nausea and vomiting. Two to four grains may occasion nausea. A small quantity snuffed up the nose produces violent irritation.

Dr. Smith, of Wilkesbarre, Penna., used for some years, with great success, the powdered root in jaundice. He administered it in doses of fifteen or twenty grains. (Philad. Med. Museum, vol. ii. p. 160, 1806).

In 1824, Dr. James F. Dana, of N. Y., discovered the active principle, and his assistant, Mr. Augustus A. Hayes, of Windsor, Vt., gave the following process for its preparation:

Thoroughly exhaust the contused root by successive macerations in water acidulated with sulphuric acid; filter, add water of ammonia as long as a precipitate falls; decant and wash on a filter, first in water containing a little ammonia, and then in pure water, to get rid of the ammonia. Macerate the precipitate in alcohol, filter, distil off three-fourths of the alcohol, and pour the remainder into eight times its bulk of water. Collect and wash the precipitated sanguinarina.

The late Dr. William Tully carefully investigated the therapeutical properties of the blood-root. His first paper was published in the New England Jour. of Medicine and Surgery, vol. viii. p. 106, 1819. His second paper, or "Prize Essay," on the same subject is an elaborate and exhaustive article, detailing the observations of himself and others on its effects in different diseases. (See Amer. Med. Recorder, vol. xiii. p. 23, 1828.)

In a third article, (see Boston Med. and Surg. Jour. p. 247, 1832), treating of the active principle, he says, that sanguinarina or its tartrate, given in large doses, causes vertigo, dilatation of the pupils, staring and protuberance of the eyes, a haggard expression, nausea, coldness of the extremities, cold sweats and diminution of the frequency and irregularity of the pulse.

Another ardent investigator of the properties of our indigenous plants, Dr. W. Zollickoffer, of Maryland, had his attention directed, about the same time as Dr. Tully, to the Sanguinaria Canadensis. He used a saturated tincture of the root as a tonic, in doses of eight or ten drops three times a day. In acute rheumatism he gave beneficially thirty drops of this tincture combined with eight drops of laudanum every three hours until nausea was induced. (Phil. Jour. of Medical and Physical Sciences vol. vi. p. 295, 1823).

That it is poisonous in large doses is painfully proved by the following fact: In July, 1841, four persons, while engaged in cleaning the Apothecary Department of Bellevue Hospital, N. Y., found a demijohn containing the tincture, of which they drank freely, mistaking it for liquor. They were all seized with racking and burning pains in the mouth, throat, stomach and bowels, and a tormenting thirst. Having concealed from the physician what they had done, restorative measures were not resorted to until too late, and death ensued in each case on the following day. (Amer. Jour. of Med. Sci. p. 506, Oct., 1841.)

In consequence of its local action, bloodroot has been much employed as a resolvent. Thus, Dr. R. G. Jennings, of Va., asserts that a weak vinegar (℥½ macerated for a few hours in Oj. of vinegar) is superior to any gargle he has ever used in the sore throat of scarlet fever, especially when the larynx appears to be seriously implicated. (Stethoscope, vol. ii. p. 183, Richmond, 1852.)

Dr. Brice, of Newark, Ohio, reports three cases of nasal polypus cured by the direct application of bloodroot in powder and decoction. (West. Jour. of Med. and Surg. vol. ii. p. 237, Louisville, 1840).

Dr. Lewis Shanks also reports a case of the same disease cured by similar means. (Amer. Jour. Med. Sci. p. 368, Oct., 1842.)

As an emetic, Dr. Henry West thinks the bloodroot ranks intermediately between ipecacuanha and tartar emetic, being more nauseating than the former and less prostrating than the latter. He gives ten grains of the powder, or two fluidrachms of the tincture, every twenty minutes, until vomiting is produced. He considers it highly beneficial in croup and laryngismus stridulus. (Western Lancet, vol. xi. p. 441, 1850.)

Most of the writers already quoted, and many others that might be named, speak in terms of commendation of an alterative or deobstruent property of bloodroot, and therefore recommend its employment in jaundice. But they generally use it as an adjuvant rather than as the principal remedy. Dr. J. L. Mothershead, of Indianapolis, is an exception to this remark. He sums up ten years' experience by asserting strongly its alterative properties. In jaundice, after giving a portion or two of calomel, he exhibits from thirty to sixty drops of the tincture three times daily in compound syrup of sarsaparilla. In a few days the yellow tint leaves the skin. (N. West. Med. and Surg. Jour. p. 369, 1849.)

Another property of great value is thus described by Dr. Isaac Thorn, of Yellow Springs, Ohio, after a large experience with the drug. "It is a sedative of no ordinary powers. For reducing the force and frequency of the pulse at the same time without prostrating the system, it is one of our most efficient remedies. Its sedative effects are exerted slowly, not being perceived until after the medicine has been administered 24 to 48 hours, and then come on very gradually." (Western Jour. of Med. and Surg. p. 397, 1847.)

The foregoing extracts, illustrating the observation and experience of practical physicians whose attention had been directed to the plant under consideration, show conclusively that it is entitled to a more extended trial, with a view to determine "its claims to a prominent position in the Materia Medica."

In order to resolve the question referred to me, concerning the actual value of the alkaloid existing in bloodroot, and the salts formed from it, I obtained from Messrs. W. S. Merrill & Co., of Cincinnati, a portion of the sulphate of sanguinarina, and I had the pure alkaloid and the acetate prepared therefrom by Mr. W. R. Warner, of this city, whose well-known accuracy as a chemist is a sufficient guaranty of the genuineness and purity of the specimens subjected to therapeutical investigation.

Sanguinarina, as procured from the sulphate, is a yellowish-gray powder without odor, and almost without taste. A slight acrimonious impression is developed after a time upon the tongue from the partial solubility of the alkaloid in saliva. Snuffed into the nostrils it causes, after a few minutes, a burning sensation followed by sneezing. It is nearly insoluble in water, sparingly soluble in glycerin, and soluble in chloroform and ether, and in a large quantity of alcohol.

Sulphate of Sanguinarina is a granular powder, of a bright vermilion-red color, without odor, but having an extremely acrimonious taste. The acrimony is particularly manifested in the throat. It is freely soluble in water, soluble in glycerin, and in a large quantity of alcohol and syrup; but nearly insoluble in chloroform and ether. Ammonia precipitates it from a watery solution. The precipitate is not redissolved by an excess of ammonia.

Acetate of Sanguinarina is in dark brownish-red scales. It has no odor. The taste is less acrimonious and more slowly developed than with the sulphate. It is slightly soluble in water, ether, and alcohol, but freely soluble in chloroform.

Therapeutical experiments with Sanguinarina (the pure alkaloid).

I. Being in good health and engaged in my usual avocation, I took one-twentieth of a grain of the alkaloid at 9 A.M., and at 1, 6, and 10 P.M., daily, for seven successive days. This experiment was instituted to ascertain the proper dose, as also the effects when continued for several days.

At the beginning of the experiment the pulse was 60, and continued about that rate for two days. Upon each of the five following days it stood at 60 in the morning, and at 52 or 53 in the evening. In health the pulse is usually rather more frequent in the afternoon, from exercise or labor. Here, however, the order was reversed. For in the afternoon, when affected by the remedy, the pulse fell to 53, but the influence of the sanguinarina being diminished or lost at night in the long interval from 10 P.M. to 9 A.M., the pulse rose to its ordinary rate in the morning.

The medicine was taken in the pill form. It occasioned no distress in the stomach, no action on the bowels (there having been but the usual daily evacuation), and no change in the character of the evacuation. The kidneys and skin were not influenced in any appreciable degree. There was no flow of saliva or uneasiness in the mouth, and there was no vomiting or even nausea for the first five days, but on the sixth and seventh days I was conscious of gastric discomfort.

II. In this experiment the quantity of the alkaloid was increased to one-tenth of a grain, which was taken four times a day for two successive days. The pulse at the commencement was 60, and at the close of the experiment it was reduced to 52. On the second day I experienced a feeling of warmth and uneasiness in the stomach about half an hour after each dose. I was not conscious of any other action on the system, excepting a slight sensation of fulness in the temples.

III. I administered to a girl, aged twelve, who had a hard, dry, racking cough, one-thirtieth of a grain every four hours for four days. Her usual pulse is 85. At the beginning of the experiment it was 104, and at the close of the fourth day it had fallen to 88. The cough in the meanwhile had become a little more loose, but, as the change was not very evident, I was obliged to discontinue the remedy to gratify the parents. The reduction of the pulse was the only apparent action of the medicine.

IV. One-fifth of a grain was administered to two patients every four hours for a day. Both patients complained of uneasiness in the stomach after the second dose, which increased to nausea after the third and fourth doses. In each case the pulse was reduced, but the reduction appeared to be owing quite as much to the nausea as to any positive sedative effect of the remedy upon the heart.

Experiments with the Sulphate of Sanguinarina.

Having obtained by the previous trials a knowledge of the proper quantity to be administered, I placed in the hands of Mr. B. L. Bird, one of the Resident Physicians of the Episcopal Hospital, some of the sulphate, which he gave to a number of the patients, carefully watching the results.

He exhibited the remedy in doses ranging from one-tenth to one-half of a grain every three hours. In no case had we reason to think that it acted on the bowels, kidneys, or skin.

When given in doses of one-tenth to one-sixth of a grain, nearly all of the patients could take it every three hours for one or two days without experiencing nausea or much gastric uneasiness; and in every case but two the pulse was reduced five to ten beats in the minute, after the patient had taken it 36 to 48 hours.

In one case, three doses of a quarter of a grain each were given at intervals of two hours. After each dose the patient experienced warmth in the stomach and nausea. The last dose was followed by vomiting. The reduction of a few beats in the pulse, in this case, was probably occasioned by the sickness of the stomach.

In another case a single dose of a quarter of a grain produced nausea and slight vomiting. Half a grain was administered to another patient as an emetic, and the dose was repeated in fifteen minutes. Prompt and free vomiting occurred soon after the second dose without undue retching or distress.

The following is a convenient mode of exhibiting the sulphate in solution as an expectorant.

℞. Sanguinarinæ sulphatis, gr. j.;
Aquæ, fʒj.
Solve et adde
Syrupi, fʒxv.
M.
Signa. Dose, a teaspoonful.

Experiments with the Impure Acetate.

I determined to try the acetate in an impure form, for the purpose of ascertaining whether the other principles associated with the alkaloid in the plant modify to an appreciable extent its action on the system. To effect this object, four ounces of the contused root were macerated in a pint of diluted acetic acid, then placed in a percolator, and a pint of percolate drawn off. This preparation is so acrid to the taste that a fluidounce of syrup will scarcely obtund the acrimony of a fluidrachm. This circumstance, after a trial of the medicine in ten or twelve cases of chronic bronchitis, induced me to have the remedy prepared in a more palatable form, as follows:—

Syrup of Sanguinaria.
℞. Contused bloodroot, ℥ij.
Diluted acetic acid. Oj.
Sugar, ℔s. ij.

Moisten the root with a portion of the acid, place in a percolator, add the remainder of the acid, exhaust by percolation, and to the clear liquid add the sugar, and dissolve by a gentle heat.

The strength of this preparation is one ounce to a pint of syrup, and the dose is a teaspoonful.

The syrup was extensively used at the Episcopal Hospital during last winter and spring, having been given in more than an hundred cases of diseases of the throat and lungs. It was generally administered in combination with an equal quantity of syrup of Tolu.

The results of the trials with the syrup may be briefly stated thus:—When given regularly at short intervals for three days or longer, the patient would speak of an uneasiness in the stomach, or nausea, and, as a consequence, of impaired appetite. The pulse remained at about its previous average, or was slightly diminished in frequency. The bowels were not relaxed, nor did constipation follow its employment.

The syrup is a good expectorant. During its use the patient could separate and raise the mucus with less difficulty, and the secretion of mucus appeared to be diminished.

The condition of the brain was carefully observed, but no evidences of a narcotic action were manifested. It is true that several of the patients slept better at night, but this seemed to be due more to the relief of the cough than to a specific narcotic action of the drug.

As the result of the various experiments above alluded to, and partly described, I think the following conclusions may be considered established, viz.:—That sanguinarina and its salts, when given in doses ranging from one-twelfth to one-eighth of a grain, act as an expectorant, promoting the discharge of the mucus from the lungs without disordering the stomach to any considerable extent.

When given in quantities of one-sixth to one-fourth of a grain at intervals of two or three hours, most persons experience nausea after each dose, and some actually vomit.

If half a grain be given in solution every ten minutes, vomiting will almost certainly ensue after the second or third dose.

If the eighth or the sixth of a grain be given every three hours for two or more days, the pulse will generally be reduced from five to fifteen beats in a minute, thus showing a decided sedative impression on the heart, which impression, however, is slowly developed, and ceases soon after the medicine is discontinued. The reputed effects of bloodroot upon the liver, and as an alterative, have not been produced by sanguinarina or its salts upon myself or others subjected to experiment. The alkaloid sanguinarina is certainly the most valuable principle existing in the bloodroot, but I am persuaded it is not the sole agent, as some trials made with the impure resin show that the latter also possesses nauseant and emetic properties.

ON FLUID EXTRACTS.

BY WILLIAM PROCTER, JR.

In American pharmacy, at the present time, the subject of Fluid Extracts has attained to an importance that renders its study a necessity to the educated pharmaceutist and druggist. Whether it be due to the convenience of prescribing them, the facility of regulating doses, or, what is perhaps a better reason, the accurate relation which well made fluid-extracts have to the crude drug; certain it is that a large number of physicians use them in preference to other preparations; and in the civil and military hospitals their introduction has been very general, and is extending.

Two views have been taken by practical pharmaceutists of the manner of making these preparations. One plan aims at extracting, by one or several menstrua, all the soluble matter of a drug, concentrating the fluid, or fluids, and mixing them either before or afterwards with each other and the preservative agent. The other plan aims at selecting the medicinal constituents, to the exclusion, as far as possible, of those that are inert, by a proper selection of solvents or by the separation of the more inert by a subsequent operation. The latter is the more desirable method if it can be carried out with judgment; but unfortunately the relation of the proximate constitution of drugs to their therapeutic action has been so imperfectly studied, in many cases, and the analyses of drugs themselves so incomplete, that such a method in its strictest sense can hardly be carried out at present. Mr. Merrill's idea, that medicinal proximate principles are all soluble in alcohol, whilst nutritive principles very frequently are not, is, to a large extent borne out in fact; and his proposition to first extract all that is soluble from a plant, and then precipitate a portion of the inert matter, by means of alcohol, is philosophically correct in the main. The preparations called *concentrated tinctures*, which that gentleman has suggested, are not, however, necessarily fluid extracts. In studying a drug with a view to making from it a fluid extract, the first step is to decide on the solvent or solvents best adapted to dissolve the active ingredients, and after concentrating the solutions, to preserve them from decomposition by means of sugar, alcohol, or some other agent. In a solution so complex as is an ordinary fluid extract, the relationship of the dissolved bodies to the solvent is an interesting study. Many substances thus brought into solution in a group, do, after a time, seem to repel, or become incompatible with each other, and the primary equilibrium of solubilities being disturbed, a deposition of sediment occurs, composed sometimes of several of the dissolved bodies, sometimes of a single ingredient. This deposition is due to various causes—sometimes to a change in the solvent—sometimes to a reaction between the ingredients—sometimes to such agencies as light, atmospheric oxygen, or a tendency to crystallization. It is almost impossible to keep a strong solution of Cantharides without a separation of cantharidin; dense solutions of cubebs, and of black pepper deposit cubebin and piperin, whilst it has been clearly shown by Warren de la Rue that a simple tincture of rhubarb deposits crysophanic acid, and the three peculiar resins of that drug. In making fluid extracts, we have to contend with all those agencies which tend to alter tinctures or infusions; as well as to provide against the constant change in the composition of the menstruum during the evaporation, when it is hydroalcoholic, and after thus altering the relation of solvent to the dissolved matter, we have to prevent its decomposition and retain the active ingredients in solution by a resort to preservative agents, like sugar. In the instance mentioned of rhubarb, the association of sugar prevents the deposition of the resinous principles, in great measure.

This solvent power of sugar is manifested in other instances, and is most active when added to the solution before concentration, as in the case of cinchona, where, whilst hot, most of the cinchonic red and cinchotannates are held in solution, a part of them only separating as a brown sediment, as the fluid extract cools, which is retained because of its medicinal value.

Advantage has not heretofore been taken of the solvent and antiseptic properties of glycerin in the construction of fluid extracts to any extent, although it has been suggested. Its remarkable power of dissolving many substances seems to point to it as a valuable agency. Indeed the propriety of resorting to distinct or special solvents for securing the active principle of drugs in fluid extracts has not been well studied ; as, for instance, acetic acid for the vegetable alkalies ; alkaline solutions for the active resins of jalap, scammony, etc. In this direction much has yet to be learned of the effects of alkalies in modifying the therapeutic properties of these remedies.

Of the plans hitherto tried for making fluid extracts, that of reserving a portion of the first concentrated percolate, as a means of preserving the preparation, is the most satisfactory, where it can be adopted. This plan, though used in several cases by myself in making some of these preparations, at an earlier period, and always recommended in making extracts of volatile principles, was first practically introduced to notice by my friend Prof. Graham, formerly of Baltimore, in connection with fluid extracts, in his essays on Fluid Extracts of Valerian, Buchu, and Roses in 1858 ; and for the developement of this idea, together with his admirable essay on percolation read at the Washington meeting of the Association in the same year, American pharmaceutists owe him a debt of gratitude and respect.

In this method the operator should give the strictest attention to the preliminary preparation of the drugs for percolation, so that the very largest amount possible of soluble matter shall be removed in the first portion of the percolate, including especially the more volatile and odorous ingredients which would be more or less dissipated during evaporation. The necessary details for accomplishing this, where not known to the reader, will be found clearly stated in the preliminary chapter of the new United States Pharmacopœia, which is deserving of a careful study by all. When this method is pursued, the remainder of the solution on being evaporated loses its alcohol, and becomes almost an aqueous liquid; this added to the stronger reserved tincture at once changes the solvent power of its menstruum by dilution, and sometimes causes a precipitation, generally, however, this sediment is of no account, and after agitation several times, until a new equilibrium is established, the fluid extract may be filtered.

Should, however, a case occur where the excessive oleoresinous character of the dissolved matter required the full strength of alcohol, ·835, to keep it in solution, then it will be necessary to evaporate the weaker liquors to a soft extract, and dissolve this in alcohol sufficient to make the measure.

It will be generally conceded that the liquid form is that most favorable to the actions of medicines. The fluid extracts, to be perfect, should be complete solutions of *all* the soluble medicinal matter of the several drugs. As yet, this has not been accomplished, although an approach has been made to it; and the door is open for further improvement.

In the formulas which follow, there has not been sufficient time afforded to examine many of the extracts, or to study the effect of age on most of the preparations. Depositions will be found to occur in many of them, but as this can rarely affect their medicinal value, and is only an inconvenience to the dispenser, it may be borne with until a system of treatment is adopted whereby a sort of analytical selection by solvents is employed to reject the interfering ingredients.

In the classification of the Fluid Extracts it has been determined to arrange them in groups in which a similarity of the chemical composition of drugs warrants an analogous treatment. This arrangement is somewhat different from that in my former paper in the Proceedings of the Association for 1859, and of which this may be considered a revision. The whole are placed in four classes, each of which has several sections. This has been found necessary in order to consider them in groups, so as to curtail the description, and avoid the necessity of detailing the manipulation for each separate substance. In a few cases this grouping has been effected at the sacrifice of some special details of treatment, but in no instance, so far as is known, has the final result been injured by a disposition to carry out the plan.

Class I.

ALCOHOLIC FLUID EXTRACTS.

The alcoholic fluid extracts may all be viewed as concentrated tinctures, but whilst they are similar in the ratio of their medicinal strength, they vary in the strength of the menstruum used, and in the final amount of alcohol remaining in the finished preparations; and it is this variation in the strength, and mode of employing the alcohol, which causes the division into sections. In every instance the fluid extract is preserved by a portion of the percolate reserved from the first runnings.

SECTION FIRST.

Menstruum officinal alcohol (*sp. gr.* ·835). *Proportion of the alcohol in the preparations,* 60 *per cent.*

Extractum Aconiti Radicis Fluidum.

Fluid Extract of Aconite Root.

Take of Aconite Root in fine powder 16 troyounces.
Alcohol, a sufficient quantity.

Moisten the powder with six fluidounces of Alcohol, pack it firmly in a cylindrical percolator, cover the surface with a disc of muslin, and pour in Alcohol until twelve fluidounces of tincture have slowly passed. Set this aside in a close vessel, and continue the percolation until two pints and a half more of tincture have been obtained. Evaporate this by means of a water-bath still, until reduced to four fluidounces, and mix it with the reserved tincture. After standing twenty-four hours, with occasional agitation, filter it.

In the same manner prepare

Extractum Buchu Fluidum, U. S. P.

From Buchu in fine powder, sixteen troyounces.

Extractum Caryophylli Fluidum.

From Cloves in moderately fine powder, 16 troyounces.

Extractum Canellæ Fluidum.

From Canella, in fine powder, 16 troyounces.

Extractum Capsici Fluidum.

From Capsicum in fine powder, 16 troyounces.

Extractum Cardamomi Fluidum.

From Cardamom in moderately fine powder,[*] 16 troyounces.

Extractum Chenopodii Fluidum.

From Wormseed in moderately fine powder, 16 troyounces.

Extractum Cimicifugæ Fluidum.[†]

From Cimicifuga in fine powder, 16 troyounces.

Extractum Cubebæ Fluidum.

From Cubeb in moderately fine powder, 16 troyounces.

Extractum Cypripedii Fluidum.

From Cypripedium, in fine powder, 16 troyounces.

Extractum Iridis Fluidum.

From Blue Flag in moderately fine powder, 16 troyounces.

Extractum Inulæ Fluidum.

From Elecampane in fine powder, 16 troyounces.

Extractum Jalapæ Fluidum.

From Jalap in fine powder, 16 troyounces.

Extractum Lupulinæ Fluidum.

From Lupulin, 16 troyounces.

Extractum Myrrhæ Fluidum.

From Myrrh, in tears, reduced to moderately coarse powder, 16 troyounces.

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[*] The seed powdered separately from the capsules, the latter put on top of the powder in the percolator.

[†] The U. S. Pharmacopœia process differs from this in using first Oiss. of 95 per cent. alcohol, and afterwards diluted alcohol, setting aside the Oiss. of tincture till it evaporates to f℥xij., then continuing the percolation with diluted alcohol to get Oij., evaporating this to f℥iv. and mixing it with the first concentrated liquid. See Section 4th.

Extractum Nucis Vomicæ Fluidum.

From Nux vomica, in fine powder, 16 troyounces.

Extractum Podophylli Fluidum.

From May-apple, in fine powder, 16 troyounces.

Extractum Pyrethri Fluidum.

From Pellitory, in fine powder, 16 troyounces.

Extractum Pimentæ Fluidum.

From Pimento, in fine powder, 16 troyounces.

Extractum Sabadillæ Fluidum.

From Cevadilla, in moderately fine powder, 16 troyounces.

Extractum Valerianæ Fluidum, U. S. P., 1860.

From Valerian, in fine powder, 16 troyounces.

Extractum Veratri Viridis Fluidum.[*]

From American Hellebore, in moderately fine powder, 16 troyounces.

Extractum Xanthoxyli Fluidum.

From Prickly Ash, in moderately fine powder, 16 troyounces.

Extractum Zingiberis Fluidum.

From Jamaica Ginger, in fine powder, 16 troyounces.

Remarks.—In glancing over the above list, the reader will find that the active principles to be removed are nearly all resinous or oleoresinous, only four of them being alkaloidal substances. By the use of undiluted alcohol and reserving three-fourths of the bulk of the fluid extract of the first liquid that passes, nearly the whole of the most valuable portions are gained without any exposure to heat and air during evaporation. By the use of a water-bath still, the alcohol may be recovered from the weaker liquors, and the process of evaporation should be finished at a lower temperature, say 150° F. None of the fluid extracts are better characterized by their sensible properties than are those of the oleoresinous class; and they also preserve their condition well. (See appendix.)

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[*] The officinal process differs from this merely in being a little less alcoholic; only half a pint being reserved instead of twelve fluidounces.

ALCOHOLIC FLUID EXTRACTS.

SECTION SECOND.

Menstruum three parts of alcohol and one of water. Proportion of alcohol in the preparations, 50 per cent. nearly.

Extractum Aconiti Folii Fluidum.

Take of Aconite Leaf, in fine powder, 16 troyounces.
Alcohol.
Water, of each a sufficient quantity.

Mix three pints of alcohol with a pint of water. Moisten the powder uniformly with six fluid ounces of the mixture, pack it firmly in a conical percolator, cover the surface with a cloth, and pour on the same menstruum until three pints have slowly passed, being careful to reserve the first twelve fluidounces. Evaporate the remainder in a water-bath still, or in a water-bath at 150°, until reduced to four fluidounces. Mix it with the reserved tincture, and after standing, with occasional agitation, for twenty-four hours, filter, dropping sufficient of the menstruum on the filter to make the measure of a pint.

In the same manner prepare

Extractum Arnicæ Fluidum.

From Arnica, in coarse powder, 16 troyounces.

Extractum Belladonnæ Fluidum.

From Belladonna Leaf, in fine powder, 16 troyounces.

Extractum Calami Fluidum.

From Calamus, in moderately fine powder, 16 troyounces.

Extractum Cascarillæ Fluidum.

From Cascarilla, in fine powder, 16 troyounces.

Extractum Colchici Radicis Fluidum.

From Colchicum Root, in moderately fine powder, 16 troyounces.

Extractum Colchici Seminis Fluidum.

From Colchicum Seed, in moderately fine powder, 16 troyounces.

Extractum Colocynthidis Fluidum.

From Colocynth deprived of the seeds, 5 troyounces.

Extractum Hellebori Fluidum.

From Black Hellebore, in fine powder, 16 troyounces.

Extractum Hyoscyami Fluidum.

From Henbane Leaf, in fine powder, 16 troyounces.

Extractum Matico Fluidum.

From Matico, in moderately fine powder, 16 troyounces.

Extractum Scillæ Fluidum.

From Squill, in moderately coarse powder, 16 troyounces.

Extractum Scoparii Fluidum.

From Broom, in moderately fine powder, 16 troyounces.

Extractum Senegæ Fluidum.

From Seneka, in moderately fine powder, 16 troyounces.

Extractum Stramonii Folii Fluidum.

From Stramonium Leaf, in fine powder, 16 troyounces.

Extractum Tabaci Fluidum.

From Tobacco, in fine powder, 16 troyounces.

Remarks.—The fluid extracts in the above list include the more important narcotic leaves and several other alkaloidal drugs, as well as two resinoid drugs. By making the menstruum more alcoholic than diluted alcohol, certain inert and interfering substances are rejected, as in colchicum, colocynth, and seneka, and it is yet sufficiently aqueous to meet all the demands required of that solvent. The proportion of alcohol in them is rather greater than in ordinary diluted alcohol tinctures, bulk for bulk; but when considered dose for dose, the fluid extracts are much less stimulant. The propriety of keeping such fluid extracts as colocynth and black hellebore is not here discussed; the question is to offer a means of making them should they be needed.

ALCOHOLIC FLUID EXTRACTS.

SECTION THIRD.

Menstruum diluted alcohol. Proportion of alcohol in the preparations, about 30 *per cent.*

Extractum Angusturæ Fluidum.

Take of Augustura, in moderately fine powder, 16 troyounces.
Diluted Alcohol, a sufficient quantity.

Mix the Augustura with four fluidounces of the diluted alcohol, pack it in a conical percolator, cover the surface with cloth, and add diluted alcohol until three pints of tincture have slowly passed, carefully reserving the first twelve fluidounces. Evaporate the remainder of the tincture in a water-bath still to four fluidounces, mix it with the reserved tincture, agitate occasionally during twenty-fours, and filter, dropping sufficient diluted alcohol on the filter to make the measure of a pint.

In the same manner prepare

Extractum Chirettæ Fluidum.

From Chiretta, in moderately fine powder, 16 troyounces.

Extractum Calumbæ Fluidum.

From Columbo, in moderately fine powder, 16 troyounces.

Extractum Eupatorii Fluidum.

From Thoroughwort, in moderately fine powder, 16 troyounces.

Extractum Gentianæ Fluidum.

From Gentian, in moderately fine powder, 16 troyounces.

Extractum Humuli Fluidum.

From Hops, in coarse powder, 16 troyounces.

Extractum Hydrastis Fluidum.

From Hydrastis, in moderately coarse powder, 16 troyounces.

Extractum Lappæ Fluidum.

From Burdock, in moderately coarse powder, 16 troyounces.

Extractum Papaveris Fluidum.

From Poppy, deprived of the seeds, in coarse powder, 8 troyounces.

Extractum Pareiræ Fluidum.

From Pareira Brava, in coarse powder, 16 troyounces.

Extractum Phytolaccæ Fluidum.

From Poke Root, in moderately coarse powder, 16 troyounces.

Extractum Prinos Fluidum.

From Black Alder, in coarse powder, 16 troyounces.

Extractum Quassiæ Fluidum.

From Quassia, in moderately fine powder, 16 troyounces.

Extractum Rosæ Gallicæ Fluidum.

From Red Rose, in fine powder, 16 troyounces.

Extractum Salicis Fluidum.

From Willow, in moderately fine powder, 16 troyounces.

Extractum Scutellariæ Fluidum.

From Scullcap, in moderately fine powder, 16 troyounces.

Extractum Serpentariæ Fluidum.

From Serpentaria, in fine powder, 16 troyounces.

Extractum Taraxaci Fluidum.

From Dandelion, in moderately coarse powder, 16 troyounces.

Extractum Xanthorrhizæ Fluidum.

From Yellow-root, in moderately fine powder, 16 troyounces.

Remarks.—In this class, the so-called bitter extractive is a common ingredient, though several alkaloids and crystalline bitter principles, are found among them. Serpentaria, which would naturally be placed with Buchu and Valerian at first thought, is properly here, firstly, because it is desirable not to have much alcohol in the preparation, and secondly, because the proportions of its volatile and resinous ingredients are small, and easily removed by the menstruum used.

ALCOHOLIC FLUID EXTRACTS.

SECTION FOURTH.

Menstruum stronger alcohol and diluted alcohol. Per centage of alcohol in the fluid extracts about 33 per cent.

Extractum Cimicifugæ Fluidum, U. S. P.

" Take of Cimicifuga, recently dried, 16 troyounces.
Stronger Alcohol, a pint and a half.
Diluted Alcohol, a sufficient quantity.

Moisten the Cimicifuga with four fluidounces of the stronger alcohol, introduce it into a conical percolator, pour upon it the remainder of the stronger alcohol, and when this has entered the powder, gradually add diluted alcohol until a pint and a half of tincture have passed. Set this aside in a shallow vessel, in a warm place, until reduced by spontaneous evaporation to twelve fluidounces. Continue the percolation with diluted alcohol until two pints more of tincture have been obtained. Evaporate this by means of a water-bath, at a temperature not exceeding 150°, to four fluidounces. Then add it to the tincture first obtained very gradually, so as to avoid precipitation (of the resin in the latter). Allow the mixture to stand for twenty-four hours, and filter through paper." *U. S. Pharm.*, 1860.

In the same manner prepare

Extractum Absinthii Fluidum.

From Wormwood, in moderately coarse powder, 16 troyounces.

Extractum Achilleæ Fluidum.

From Yarrow, in moderately coarse powder, 16 troyounces.

Extractum Anthemidis Fluidum.

From Chamomile, in moderately coarse powder, 16 troyounces.

Extractum Aurantii Corticis Fluidum.

From Orange Peel, recently dried and in moderately fine powder, 16 troyounces.

Extractum Chenopodii Fluidum.

From Wormseed, in moderately coarse powder, 16 troyounces.

Extractum Erigerontis Fluidum.

From Canada Fleabane, in moderately coarse powder, 16 troyounces.

Extractum Juniperi Fluidum.

From Juniper, thoroughly bruised, 16 troyounces.

Extractum Marrubii Fluidum.

From Horehound, in moderately coarse powder, 16 troyounces.

Extractum Rosmarini Fluidum.

From Rosemary, in moderately fine powder, 16 troyounces.

Extractum Sabinæ Fluidum.

From Savine, in fine powder, 16 troyounces.

Extractum Salviæ Fluidum.

From Sage, in moderately fine powder, 16 troyounces.

Extractum Tanaceti Fluidum.

From Tansy, in moderately coarse powder, 16 troyounces.

Remarks.—It will be perceived that the formula at the head of this section is taken from the U. S. Pharmacopœia. The rationale of the routine of the process is based on the fact that there is much volatile or easily decomposible matter to be extracted, and in the subsequent use of the preparation it is desirable to avoid the use of much alcohol. The spontaneous evaporation of the stronger alcohol is effected with considerable rapidity by setting it in a warm place, in freely circulating air. The last evaporated liquid should be added gradually to that obtained by spontaneous evaporation, and not *vice versa ;* as it is of less consequence to precipitate matters more soluble in water than those more soluble in alcohol. In the text of the Pharmacopœia of 1860 this was an oversight in the recipe for fluid extract of Cimicifuga, which has been here corrected. In the case of Savin it may be better to evaporate the last liquors carefully to f℥ii., and add f℥ii. of stronger alcohol before mixing with the first liquid.

CLASS II.

ACETIC FLUID EXTRACTS.

Menstruum diluted alcohol, or alcohol with a portion of acetic acid intended partially for preservation, but mainly for retaining important volatile ingredients.

SECTION FIRST.

Extractum Conii Fluidum, U. S. P.

"Take of Hemlock, recently dried and in fine powder, 16 troyounces.
Acetic acid, half a fluidounce.
Diluted Alcohol, a sufficient quantity,

Mix the acid with three pints of diluted alcohol, moisten the powder with half a pint of the mixture, pack it in a conical glass percolator, and gradually pour the mixture upon it until twelve fluidounces of tincture have passed. Set this aside and continue the percolation, first with the remainder of the mixture and afterwards with diluted alcohol, until three pints more of tincture have been obtained. Evaporate this by means of a water bath, at a temperature not exceeding 150° (F.) to four fluidounces, mix it with the reserved tincture and filter through paper." *U. S. Pharm.*, 1860.

In the same manner prepare

Extractum Digitalis Fluidum.

From Digitalis, in fine powder, 16 troyounces.

Extractum Ergotæ Fluidum.

From Ergot, in fine powder, 16 troyounces.

Extractum Lobeliæ Fluidum.

From Lobelia, in fine powder, 16 fluidounces.

Extractum Sanguinariæ Fluidum.

From Bloodroot, in fine powder, 16 troyounces.

ACETIC FLUID EXTRACTS,

SECTION SECOND.

Extractum Ipecacuanhæ Fluidum.

"Take of Ipecacuanha, in fine powder, 16 troyounces.
Acetic Acid, a fluidounce.
Alcohol.
Water, of each a sufficient quantity.

Moisten the Ipecacuanha with six fluidounces of alcohol, introduce it into a conical percolator, and pour Alcohol upon it until three pints of tincture have slowly passed, or until the Ipecacuanha is exhausted. Distil off the alcohol from the tincture by means of a water bath still, until a syrupy liquid is left. Mix this with the acetic acid and ten fluidounces of water, boil the mixture gently until it is reduced to half a pint and the resinoid matter has separated. Filter the liquid when cold, and add sufficient water through the filter to make the filtered liquid measure half a pint. Lastly, mix this with half a pint of alcohol." —*U. S. Pharm.* 1860.

Remarks.—In the *first* section of acetic fluid extracts the motive for using the acetic acid is to prevent the volatilization of the alkaloids during evaporation, as in each drug in the list the active principle is combined with an organic acid that seems to retain it with small force, and which the acetic acid replaces in the process of making the tincture. In the *second* section, the object of the acid is to remove all traces of the alkaloid Emetia from the precipitated resinoid matter, whether simply adherent, or the result of a decomposition of the natural salt of that alkaloid. The reason for getting rid of the resin is that the fluid extract may be added to simple syrup without causing a cloudiness. Some have thought that the end could be better gained by not adding the acetic acid until after the ebullition and cooling to get rid of the last traces of alcohol which retains the resin in solution, because the acetic acid seems to aid a portion of resin or other insoluble matter to remain in solution until after the mixture of the fluid extract with syrup, when it causes a slight cloudiness. If the preparation has been successfully made, it will not precipitate when added to simple syrup.

Class III.

SACCHARINE FLUID EXTRACTS.

SECTION FIRST.

These fluid extracts are prepared with water or diluted alcohol as a menstruum; but little if any of the alcohol is retained in the preparation when finished, which is preserved by the agency of sugar.

Extractum Dulcamaræ Fluidum.

"Take of Bittersweet, in moderately fine powder, 16 troyounces.
Sugar, in coarse powder, ten troyounces.
Diluted Alcohol, a sufficient quantity.

Moisten the Bitter-sweet with half a pint of diluted alcohol, pack it in a conical percolator and pour upon it diluted Alcohol until three pints of tincture have passed. Evaporate this by means of a water-bath to a pint, add the sugar, evaporate again to a pint and strain the liquid while hot."—*U. S. Pharm.* 1860.

In the same manner prepare

Extractum Gallæ Fluidum.

From Nutgall, in moderately coarse powder, 16 troyounces.

Extractum Geranii Fluidum.

From Cranesbill, in moderately fine powder, 16 troyounces.

Extractum Granati fructûs corticis Fluidum.

From Pomegranate Rind, in moderately fine powder, 16 troyounces.

Extractum Helianthemi Fluidum.

From Frostwort, in moderately fine powder, 16 troyounces.

Extractum Quercûs Fluidum.

From Black-oak Bark, in moderately fine powder, 16 troyounces.

Extractum Rubiæ Fluidum.

From Madder, in moderately fine powder, 16 troyounces.

Extractum Rubi Fluidum.

From Blackberry Root, in moderately fine powder, 16 troyounces.

Extractum Sarsaparillæ Fluidum.

From Sarsaparilla, in moderately fine powder, 16 troyounces.

Extractum Statice Fluidum.

From Marsh Rosemary, in moderately fine powder, 16 troyounces.

Remarks.—The above fluid extracts, which contain only a trace of alcohol, and are chiefly alteratives, or astringents for use in gargles, represent well the several drugs from which they are made. In the cases of Galls and Blackberry root, the evaporated fluid should be heated to 212° for a moment, to destroy any ferment that may be present tending to excite the gallic acid fermentation.

SACCHARINE FLUID EXTRACTS.

SECTION SECOND.

The menstruum for these fluid extracts is diluted alcohol, and the resulting preparation contains both sugar and alcohol.

Extractum Chimaphilæ Fluidum.

Take of Pipsissewa, in moderately coarse powder, 16 troyounces.
Sugar, in coarse powder, 8 troyounces.
Diluted Alcohol, a sufficient quantity.

Moisten the Pipsissewa with six fluidounces of diluted alcohol, pack it firmly in a conical glass percolator, and pour on diluted alcohol until three pints have been obtained, reserving the first six fluidounces. Evaporate the remainder to six fluidounces, add the sugar whilst it is yet hot, and when dissolved mix with it the reserved tincture, and strain.

In the same manner prepare

Extractum Epigeæ Fluidum.

From Trailing Arbutus, in moderately fine powder, 16 troyounces.

Extractum Granati Radicis Corticis Fluidum.

From Pomegranate Root Bark, in moderately fine powder, 16 troyounces.

Extractum Juglandis Fluidum.

From Butternut, in moderately fine powder, 16 troyounces.

Extractum Leptandræ Fluidum.

From Leptandra, in moderately fine powder, 16 troyounces.

Extractum Rhus Fluidum.

From Sumac (berries), in coarse powder, 16 troyounces.

Extractum Senecio Fluidum.

From Life Root, in moderately fine powder, 16 troyounces.

Extractum Stillingiæ Fluidum.

From Stillingia, in moderately fine powder, 16 troyounces.

Extractum Uvæ Ursi Fluidum, U. S. P., 1860.

From Uva Ursi, in moderately fine powder, 16 troyounces.

Remarks.—The formulas in this section are analogous to that of fluid extract of Uva Ursi of the U. S. Pharmacopœia of 1860. The sugar is introduced partly for its antiseptic quality, and partly to cover taste and assist the solution of certain ingredients. There is sufficient alcohol present to offer a decided check to fermentation, and to aid very decidedly as a solvent.

UNCLASSIFIED FLUID EXTRACTS

Fluid extracts, the strength and manipulation in which varies from a regular rule, but which contain either sugar or glycerin, and alcohol.

"*Extractum Cinchonæ Fluidum*, U. S. P.

"Take of Yellow Cinchona, in moderately fine powder, 16 troyounces.
Sugar, in coarse powder, 20 troyounces.
Diluted Alcohol, a sufficient quantity.

Moisten the Cinchona with ten fluidounces of diluted alcohol, allow it to stand for half an hour, pack it firmly in a cylindrical percolator, and gradually pour upon it diluted alcohol, until four pints of tincture have been obtained. Evaporate this by means of a water-bath to two pints; then add the sugar, and again evaporate to two pints, and strain the liquid while hot."—*U. S. Pharm.*, 1860.

In effecting the evaporation for fluid extract of Cinchona, the resino-extractive matter which separates as the alcohol disappears should be kept in suspension, and not allowed to desiccate on the sides of the evaporator. The addition of the sugar before the last portion of liquid is dissipated, prevents the precipitation of a considerable portion of the insoluble salts of the alkaloids, which are retained in solution until after the straining, when the liquid cools.

Extractum Rhei Fluidum.

Take of Rhubarb, in moderately fine powder, 16 troyounces.
Sugar, 8 troyounces.
Alcohol, a pint.
Diluted Alcohol, a sufficient quantity.

Moisten the Rhubarb with four fluidounces of alcohol, pack it in a conical percolator, press gently, and pour upon it the remainder of the alcohol. When this liquid has disappeared from the surface, gradually pour on diluted alcohol until a pint of tincture has passed. Set this aside in a warm place until reduced by spontaneous evaporation to five fluidounces, and continue the percolation until two pints more of tincture have been obtained. Evaporate this by a gentle heat to eight fluidounces; then add the sugar, and, when this is dissolved, the reserved tincture, and continue the heat until the whole measures a pint.

Extractum Sennæ Fluidum, U. S. P.

"Take of Senna, in moderately fine powder, 16 troyounces.
Sugar, in coarse powder, 8 troyounces.
Diluted Alcohol, a sufficient quantity.

Moisten the Senna with six fluidounces of diluted alcohol, introduce it into a conical percolator, press it firmly, and gradually pour upon it diluted alcohol until a pint of tincture has passed. Set this aside in a warm place until reduced by spontaneous evaporation to half a pint. Continue the percolation until two pints more of tincture have been obtained. To this add the sugar, and, having evaporated it by means of a water-bath to half a pint, mix it with the reserved tincture and strain."—*U. S. Pharm.*, 1860.

In the same manner prepare

Extractum Spigeliæ Fluidum.

From Spigelia, in fine powder, 16 troyounces.

Extractum Spigeliæ et Sennæ Fluidum.

"Take of Fluid extract of Spigelia, 10 fluidounces.
Fluid extract of Senna, 6 fluidounces.
Carbonate of Potassa, half a troyounce.
Oil of Anise.
Oil of Caraway, each twenty minims.

Mix the fluid extracts, and dissolve in the mixture the Carbonate of Potassa and the oils previously rubbed together."—*U. S. Pharm.*, 1860.

Extractum Aloës Fluidum.

Take of Socotrine Aloes, in coarse powder, 8 troyounces.
Glycerin, 2 fluidounces.
Diluted Alcohol, a sufficient quantity.

Mix the Aloes and Glycerin with ten fluidounces of the diluted alcohol, stir them occasionally, until nearly all is dissolved; then pour the liquid upon a moistened close-textured muslin strainer, and let the dense clear solution pass without pressure. Remove the strainer and dregs to a dish, spread it out, add to it half a pint of diluted alcohol, and when the soluble portion of the dregs has been taken up, suspend the strainer until the liquid ceases to drop from it. Evaporate this by a gentle heat until, when added to the solution first obtained, it makes the measure of a pint, and mix them.

In the same manner prepare

Extractum Aloës Fluidum.

From Barbadoes Aloes, in coarse powder, 8 troyounces.

Remarks.—Fluid extract of Aloes made in this way fairly represents the drug, a minim being equivalent to half a grain. The glycerin is added to retard evaporation by exposure, as a solution of aloes when so dense tends to dry in a friable state around the stopper of its containing vessel. It is intended more for the convenience of the dispenser of prescriptions, and in Hospital practice, than as a preparation for use *per se.* The preparation may be made from Cape Aloes in the same manner, but the latter is less eligible as a medicine.

Extractum Catechu Fluidum.

Take of Catechu, in moderately coarse powder, 8 troyounces.
Glycerin, 4 fluidounces.
Diluted Alcohol, half a pint, or a sufficient quantity.

The Catechu, before being powdered, should be carefully garbled to remove the leaves, etc., generally present. Mix the catechu with the glycerin in a suitable mortar, until a soft, extract-like mass results. To this gradually add the diluted alcohol until the bulk of a pint is obtained, and, having poured the liquid into a bottle, close it, and agitate from time to time during twenty-four hours, and strain through thin muslin if necessary.

Remarks.—The solvent power of glycerin for the astringent apothemic extracts has been before noticed in regard to Kino, but I am not aware of its having been used with a view to making fluid extracts. In March, 1860, Dr. William S. Love is credited (Maryland Journal and Transactions,) with making a "glycerole of Kino" 120 grs. to the fluidounce, which he used instead of the tincture. Glycerin appears to possess a special solvent power for insoluble or altered tannin, as it exists in kino, catechu, krameria, and cinchona, and may be rendered available in preparing fluid extracts.

Extractum Kino Fluidum.

Take of East India Kino, in fine powder, 8 troyounces.
Glycerin, 4 fluidounces.
Diluted Alcohol, half a pint.

Proceed in the manner directed for *Fluid extract of Catechu.*

Extractum Krameriæ Fluidum.

Take of Rhatany, in moderately fine powder, 16 troyounces.
Glycerin, four fluidounces,
Diluted Alcohol, a sufficient quantity.

Moisten the Rhatany with six fluidounces of diluted alcohol, mixed with half a fluidounce of glycerin, press it in a conical glass percolator, cover it with a cloth, and pour on diluted alcohol until half a pint of tincture has slowly passed. Set this aside, continue the percolation until two pints more of tincture have passed. To this add the glycerin, evaporate carefully to half a pint, and mix it with the reserved tincture.

Remarks.—Thus prepared, fluid extract of Krameria is a dark red, transparent, syrupy liquid, has a strong astringent taste, and fully represents the drug, minim per grain. It precipitates some when mixed with water, and is a less elegant but probably a more efficient preparation than if the root had been extracted with cold water only, to avoid the krameric apotheme.

Extractum Cocci Fluidum.

Take of Cochineal, in moderately fine powder, 8 troyounces.
Diluted Alcohol, a sufficient quantity.

Mix the Cochineal with an equal bulk of sand, moisten it with a fluidounce of diluted alcohol, and again thoroughly mix them, press the mixture gently into a conical percolator, cover with muslin, and pour on diluted alcohol so it shall slowly pass. Reserve the first twelve fluidounces of the tincture, and continue the percolation until a pint more of liquid is obtained, or until sufficiently exhausted. Evaporate this carefully in a porcelain vessel until reduced to four fluidounces, and mix it with the reserved tincture.

Remarks.—This preparation, before suggested, (Amer. Jour. Phar., vol. xxxv.,) is intended as an elegant medium of dispensing cochineal, both as a medicine in whooping cough and for coloring purposes. Owing to the great solubility and gummy character of cochineal when brought in contact with water, or diluted alcohol, it is difficult to percolate it unless sand is employed, hence its use.

Extractum Glycyrrhizæ Fluidum.

Take of Calabria Liquorice, 8 troyounces.
Sugar, in coarse powder, 10 troyounces.
Water, a sufficient quantity.

Bruise the extract till it is reduced to pieces the size of a pea, enclose it in a gauze cloth, suspend it in a pint vessel, cover it with cold water, let it stand twelve hours, (in a cool place if in summer), pour off the dense solution, renew the water, and again macerate and decant. Mix the two liquids, evaporate to twelve fluidounces, dissolve in it the sugar, and again evaporate until the measure of a pint is obtained.

Remarks.—This preparation, after being kept a short time, is apt to develop a little carbonic acid, but this soon ceases, and then, without any of the usual characteristics of a fermented syrup, it keeps well. The writer has now before him a sample made in 1859, which is in all respects in good condition as to taste, odor, and consistence, and has been kept in the shop during all that period.

Extractum Opii Fluidum.

Take of Opium, in coarse powder, 8 troyounces.
Water,
Alcohol, each a sufficient quantity.

Macerate the Opium in a pint of water for twenty-four hours and express; again macerate the dregs in a pint of water, and again express. Mix the dregs with half a pint of .alcohol, put them in a conical percolator, and pour on diluted alcohol until the opium is exhausted, or until two pints of percolate are obtained. Mix the expressed liquid with the percolate, and evaporate the mixture on a water-bath until its bulk is reduced to ten fluidounces. To this add six fluidounces of alcohol, mix them, and filter.

Remarks.—In constructing a formula for a fluid extract of opium, two views offered. One to extract the opium with water only, and add sufficient alcohol to the evaporated liquid to preserve it; or to use both water and alcohol, so as to represent all the principles of the opium, as in laudanum. The latter method was preferred, as producing a nearer representative of the potency of the drug. It should be observed that this recipe is not brought forward under the impression that it possesses much merit, but as affording an elegant means of dispensing opium in ointments and liniments, and for making laudanum extemporaneously. When two and a half fluidounces of it are mixed with sufficient diluted alcohol to make a pint, laudanum results.

Extractum Pruni Virginianæ Fluidum.

"Take of Wild Cherry Bark, in fine powder, 16 troyounces.
Sweet Almond, 2 troyounces.
Sugar, in coarse powder, 24 troyounces.
Alcohol,
Water, each a sufficient quantity.

Introduce the bark, previously mixed with four fluidounces of alcohol, into a cylindrical percolator, press it firmly, and gradually pour alcohol upon it until three pints of tincture have slowly passed. From this distil off two pints and a half of alcohol, and, having mixed the residue with a pint of water, evaporate, by means of a water-bath, to half a pint.

Beat the almond into a paste, and rub this with successive portions of water until, after straining through a coarse seive or cloth, nearly all the substance of the almond has been converted into an emulsion, and twelve fluidounces of liquid have been obtained. Mix this with the liquid first obtained, in a suitable bottle, and, having closely stopped it, agitate occasionally during twenty-four hours. Then express quickly and strongly through a cloth, and if the expressed liquid measure less than eighteen fluidounces, add water to the residue, and again express until that quantity is obtained. Filter the expressed liquid through cotton flannel, in a covered funnel, into a bottle containing the sugar. Shake the bottle occasionally during the process until the sugar is dissolved, and continue the filtration until the syrupy liquid measures two pints. Lastly, mix the whole thoroughly together."—*U. S. Pharm.*, 1860.

Remarks.—As the wording of this formula has recently been carefully revised for the Pharmacopœia, it has been deemed best simply to copy it. The points which need special attention in this formula are, first, the complete exhaustion of the bark by the alcohol; second, the complete removal of the alcohol from the tincture, so as to insure the precipitation of the resin and fixed oil; third, the thorough emulsionizing of the almond, so as to render the emulsin active; and *lastly*, the expression and filtration of the hydrocyanic liquid, after the reaction between almond and amygdalin has occurred, without undue exposure or loss. If well made, Fluid Extract of Wild Cherry should form, with water, a transparent mixture. If it should form an opaque or cloudy liquid, it is an indication that the alcohol was not fully removed before the addition of the almond emulsion.

Extractum Assafœtidæ Fluidum.

Take of Assafetida, 8 troyounces.
Chloroform, 2 troyounces.
Stronger Alcohol, 12 fluidounces.
Glycerin, four fluidounces.

Beat the Assafetida until its texture is uniform, if soft; or until reduced to coarse powder, if sufficiently hard, (as in cold weather). Add to it the chloroform, and malaxate them together until the gum-resin is completely broken down to a semi-fluid mass. This should be mixed with a fluidounce of alcohol, and stirred frequently (during several hours) until the odor of chloroform, at first strong, nearly ceases to be perceptible. The remainder of the alcohol is then gradually added with constant trituration, and then the glycerin. Allow them to remain together, with occasional agitation, for twenty-four hours, and strain through muslin. If the fluid measures more than a pint, expose it to the air until reduced to that measure.

Remarks.—This fluid extract is a fair representation of the drug, as regards medicinal power. It is suggested as a ready and convenient means of dispensing this disagreeable drug in mixtures. If properly made, it contains but a mere trace of chloroform. When used to make Mistura Assafœtidæ, or its equivalent, two fluidrachms of the fluid extract are mixed with an equal bulk of syrup of Gum Arabic, shaken together, and three fluidounces and a half of water, gradually shaken with it in a four-ounce vial. The preparation represents the drug in the proportion of two minims for each grain; and for hysteric and other patients requiring strong anti-spasmodics, it may be used with good effect.

The glycerin in the preparation is employed to aid in retaining, as far as possible, the gummy portion of the gum-resin. The use of the chloroform is solely to render its remarkable solvent power available.

Extractum Cocculi Fluidum.

Take of Cocculus Indicus, 16 troyounces.
Alcohol,
Water, each a sufficient quantity.

Bruise and sift the Cocculus through a No. 40 seive, until all the kernels have passed and the capsules are well broken up. Moisten the powdered kernels with four fluidounces of a mixture of two parts of alcohol and one of water, and, after standing three hours, pack in a capacious conical percolator, and pour on the same menstruum until twelve fluidounces of tincture have passed. Set this aside, put the capsules into a dish, and digest them in two pints of diluted alcohol at 130° F. After cooling, pour the whole upon the powder in the percolator, and, when the liquid has disappeared, pour on diluted alcohol till two pints of liquid have been obtained. Evaporate this to four fluidounces, mix it with the reserved tincture, and filter.

Remarks.—This preparation is intended only as an external application in liniments, and for animal parasitic vermin, and was originated for use in the army. Its potency is so great that a very small bulk is sufficient, when diluted, for one application to dislodge these disgusting intruders.

In conclusion, it should be observed that the author has not pretended in every case to have carried out the formulas as here represented, where one hundred and thirteen different preparations are indicated; but where this has not been done, the position of the drug in the list has been based on a practical acquaintance in most cases with its habitudes as regards solvents, and with the nature of its proximate principles.

APPENDIX.

It has been deemed worthy of notice to speak a few words in reference to the present condition of some of the fluid extracts made in 1859, according to the recipes of my former essay, read at Boston in that year:

Extractum Aconiti Foliorum Fluidum. Odor and taste perfect, and contains but a small deposit.

" *Belladonnæ Foliorum Fluidum.* In good condition; separation of chlorophylle on sides.

" *Capsici Fluidum.* Perfect; a mere trace of deposit.

" *Caryophylli Fluidum.* Perfect. No sediment.

" *Chimaphilæ Fluidum.* Taste perfect; some sediment of crystals of sugar; discolored.

Extractum Cimicifugæ Fluidum. This has kept very well; but a mere trace of precipitate and the characteristic taste of the freshly-dried root well marked.

" *Cinchonæ Fluidum.* Nearly half solid from the precipitation of cinchotannates and cinchonic red; showing that the quantity of cinchona is too large, and that the proportion of the Pharmacopœia is preferable.

" *Colchici Radicis Fluidum.* Considerable amount of inert sediment, as when set aside in 1859, but the liquid retains its odor and taste. The formula now suggested, which is that of the new Pharmacopœia, employs stronger alcohol, and avoids this sedimentary matter.

" *Conii Fluidum.* Odor and taste perfect; contains a crystalline saline deposit, with some sediment.

" *Cubebæ Fluidum.* Perfect; no sediment.

" *Digitalis Fluidum.* Condition perfect; but little sediment; taste extremely bitter.

" *Dulcamaræ Fluidum.* Taste unaltered; slight deposit on sides.

" *Ergotæ Fluidum.* In good condition; some sediment.

" *Geranii Fluidum.* Perfectly transparent and astringent, and but a very little sediment.

" *Granati Rad. Fluidum.* In good condition.

" *Hyoscyami Fluidum.* Taste and odor perfect; considerable sediment.

" *Glycyrrhizæ Fluidum.* In good condition; only a slight sediment.

" *Ipecacuanhæ Fluidum.* Condition perfect.

" *Jalapæ Fluidum.* Nearly perfect; slight crystalline sediment.

" *Krameriæ Fluidum.* Heavy sediment, as at first, but quite astringent.

" *Matico Fluidum.* Taste and odor correct; some sediment, but no crystals.

" *Podophylli Fluidum.* Perfect; only a trace of sediment.

Extractum Rubi villosi Fluidum. Abundant cryptogamic crusts; has lost its astringency in great measure.
" *Sarsaparillæ Fluidum.* In good order.
" *Scillæ Fluidum.* Dark colored; a bulky flocculent sediment, but otherwise in good condition.
" *Sennæ Fluidum.* Odor and taste perfect; sediment considerable, but as originally made, contained sediment not filtered out.
" *Serpentariæ Fluidum.* Taste and odor perfect, but a slight sediment.
" *Taraxaci Fluidum.* Taste and odor correct, but little sediment.
" *Valerianæ Fluidum.* In good condition as to taste and odor; some sediment, but of no consequence.
" *Zingiberis Fluidum.* Perfect; no deposit.

The above are all of the specimens that have been kept undisturbed. By comparing the formulas for them in the proceedings of 1859, with those now offered, some modifications will be observed, which have been made with a view to improve the result. As a general rule, the strongly alcoholic preparations keep the best. It should also be remarked, that in quite a number of the specimens the original sediment had not been removed.

ON THE ACTIVE PRINCIPLES OF THE STRYCHNACEÆ.

BY FERDINAND F. MAYER, OF NEW YORK.

In taking up this subject various points have presented themselves for consideration, several of which are to be mentioned now, while others must necessarily, and by your leave, remain over for future consideration. I have thought it best to confine myself at present to some remarks on the knowledge we possess of the active principles of the Strychnaceæ; then, as to their quantitative determination pure, and in the preparations officinal in the U. S. Pharmacopœia; and though leaving the subject incomplete, these contributions are submitted as answering the main points contained in the query.

The literature, medicinal, pharmaceutical, and chemical, of the drugs derived from this family, is by no means as extensive as that of opium and of bark, nor is our knowledge of their active principles as accurate as might be expected or desired.

These active principles are supposed to be represented by two or three alkaloids, which, named in the order of discovery, are strychnia, brucia and igasurina. Pelletier and Caventou, in 1818, discovered in the Ignatia seed a bitter alkaloid which they named *Vauqueline,* in honor of the great pharmaceutist; this name Bucher, sen., considered inappropriate, and proposed in place of it *Strychnin,* which it thenceforth retained; *Tetanin* was suggested for it by Magendie. Pelletier and Caventou likewise found this alkaloid in nux vomica and bois de couleuvre, snake wood, lignum colubrinum from Strychnos colubrinum. Shortly after they noticed the existence of a different alkaloid in the bark of *Strychnos nux vomica,* then known as false angustura bark, and supposed to be that of *Brucea antidysenterica;* hence its name of Brucia, in place of which, Geiger once proposed Caniramin (*canis,* dog, *ira,* rage,) Desnoix, lastly, noticed a crystalline deposite in the alkaline liquor from which strychnia and brucia had been precipitated, and called the same *Igasurina.*[1] Schützenberger afterwards confirmed that this alkaloid concurred in many properties with brucia, but found it was itself a mixture of no less than nine different bases, varying slightly in the percentage of carbon, hydrogen, and oxygen, and water of crystallisation, as well as in solubility; the same chemist had before noticed similar variations in the composition of strychnia. It is readily perceived, from the properties ascribed to strychnia especially, and brucia, by Pelletier and Caventou, Pettenkofer, Geiger and Merck, that these chemists operated with mixtures of the alkaloids. For this reason statements as to the quantity of the respective alkaloids to be found in either nux vomica or ignatia seed, made previous to Wittstock, are not to be relied on. The latter observer states that 10 ounces of nux vomica yield 12½ grains of strychnia and 31¼ of brucia, while according to Gieseler, 10 ounces of ignatia seed yield 72 grains of strychnia. Pelletier and Henry obtained between 40 and 50 grains of this impure strychnia from 10 ounces of nux vomica.

These discrepancies find their explanation in the peculiar character of that portion of the alkaloids which is not readily precipitated by alkalies.

The alkaloid which received the name of strychnia is recorded as scarcely soluble in water and alkalies. Planta, whose observations will in most cases be found at least as trustworthy as those of others who are much more frequently quoted, never uses the expression "insoluble," in such cases, but says *not perceptibly soluble,* and this, as a matter of course, is the case with all alkaloids, since none of them are ever completely insoluble in water or completely precipitated by alkalies proper. Brucia was called originally the precipitate which falls down from mother liquors of crystallisations of strychnia by the addition of more soluble alkali, and igasurina that which finally deposited from the alkaline solution on standing. With the exception of Planta, who mentions the difficulty with which brucia is precipitated by ammonia, I find on record but one instance in which the circumstance is mentioned which enables me, without entering more closely into a consideration of the subject, to give a rapid as well as accurate method for determining strychnia in the presence of the other alkaloids; it is this, in a paper published by that excellent chemist, Dr. F. L. Winckler, of Darmstadt, in 1835, Repertorium f. de Pharmacie, Bd. li. p. 369, wherein he mentions the solubility of brucia in ammonia and caustic alkalies and earths, and determines the quantity of brucia in the alkaline mother liquor from the precipitation of strychnia by acidulating and then precipitating it with corrosive sublimate.

It might be supposed that, as this solubility is considered a characteristic of igasurina solely, this alkaloid or mixture of alkaloids was identical with brucia, and that there were in fact but two alklaoids present in the plants of one family. But there is a considerable degree in this solubility; a portion of the dissolved alkaloid crystallises out, while the remainder, which however forms a crystalline salt with oxalic acid, is held indefinitely long in solution.

Strychnia itself is, to some extent, soluble in alkaline liquids. As the proper alkali for experiments and assays of this kind, I have long since used and lately recommended in a particular instance, crystallised caustic baryta, which, in my opinion, cannot be surpassed by any other substance of this class. My remarks in this connection have therefore exclusive reference to precipitation and solution by means of caustic baryta.

One hundred c.c. of a solution of baryta at 60° F. dissolve 0·036 of a gramme, or 0·55 of a grain of strychnia.

One hundred c.c. of the same solution of baryta dissolve as a minimum 0·5 gramme, or nearly 8 grains of brucia.

In determining the strength of a preparation from a drug containing these alkaloids, it is only necessary to know the quantity of a reagent required for the sum of the alkaloids, to precipitate a known portion of the solution made from the preparation by baryta, and to dilute the alkaline liquor to a certain strength sufficient to hold in solution all the brucia which may be present.

A gramme of pure strychnia requires for precipitation 59·88 c.c. of 1-10th normal solution of iodide of mercury, provided the strength of the solution does not exceed $\frac{1}{2}$ of one per cent. The precipitate produced differs in its composition from that yielded by other alkaloids, inasmuch as it contains 2 eq. of mercuric iodide to one of hydriodate of the alkaloid. The quantity of 1-10th normal silver solution equivalent to 59·88 c.c. of mercury solution is 239·52 c.c.; of the 8 equivalents of iodine and chlorine contained in the 59·88 c.c. mercurial solution, 3 of iodine or $\frac{3}{8}$ are absorbed by the alkaloid, and there is consequently a deficiency of $\frac{3}{8}$ of the number of cubic-centimetres of the silver solution; i. e. to precipitate the filtrate from the mercurial precipitate of 1 gramme of strychnia, only 149·7 c.c. of silver solution are required.

A gramme of pure brucia requires 42·9 c.c. of mercurial solution, and the composition of the precipitate is analogous to that of the strychnia compound, and to that of the combinations of mercuric *chloride* with strychnia and brucia. It is also necessary that the brucia solution be dilute and contain no more than ½ per cent., but rather less of the alkaloid. In this case there will consequently be a deficiency of 64·35 c.c. of silver.

Of the troy weight solution of iodide of mercury, containing 16 and 2-9th grains of corrosive sublimate and 60 grains of iodide of potassium in 12½ troy ounces, every 10 grains correspond to 0·0334 of a grain of strychnia, and 0·0466 of a grain of crystallized brucia.

With these data the subjoined assays have been made, exhibiting the relative strength of the officinal preparations from nux vomica and ignatia seed, and the proportion of strychnia and the alkaloids soluble in water and alkalies, which I have classed as brucia.

I. *Six ounces powdered Nux Vomica exhausted by displacement with* 80 *per cent. alcohol.*

The tincture was evaporated on the water-bath with a little hydrochloric acid to the consistence of mellago. While still warm, it was mixed with 50 c.c. of cold water, and the fatty substances allowed to separate by standing; the whole was then filtered, and with the washings diluted to 20 c. c.

20 c.c. of these required for precipitation 21·5 c.c. of mercurial solution; the 100 c.c., or 6 ounces, therefore 107·5 c.c. Hg.

20 c.c. were then given in a 75 c.c. flask, diluted with water to 75 c.c., and then shaken with crystallized caustic baryta in excess. After filtering the alkaline solution, 40 c.c. of it was acidulated with hydrochloric acid, and then precipitated by the mercurial solution; they required 10·3 c.c., or 19·3 for the 75 c.c.—20 c.c. original solution. These 75 c.c, hold in solution strychnia equivalent to 1·63 c.c. mercurial solution, which deducted from 19·3, leaves 17·67 c.c. as the equivalent of brucia, or 88.35 c.c. in the 6 ounces. The latter number deducted from the original 107·5 c.c. leaves 19·15 c.c. as the equivalent of strychnia.

The 6 ounces of nux vomica, exhausted by alcohol of 80 per cent., therefore contain

31·75 grains of Brucia.
4·69 " Strychnia.

II. *Six ounces of the same powdered nux vomica exhausted with boiling alcohol of* 80 *per cent., acidulated with hydrochloric acid.*

The tincture from this was treated in precisely the same manner. The fatty substance contained more fluid oil.

They were found to contain

26·7 grains of Brucia.
8.57 " Strychnia.

III. *Tincture of Nux Vomica.*

225 c.c. contain 2·93 grains of Strychnia.
19·5 " Brucia.

IV. *Extract of Nux Vomica.* 5 grammes

Contain 2·46 grains of Strychnia.
7·75 " Brucia.

V. *Extract of Nux Vomica* (Ph. Boruss.) 4·6 grammes

Contain 0·7715 grains of Strychnia.
13.1155 " Brucia.

VI. *Semen Ignatiæ.* 2 ounces displaced with alcohol (80 p. c.)

Yielded 4·93 grains of Strychnia.
9·86 " Brucia.

VII. *Semen Ignatiæ,* (the same.) Two ounces extracted with alcohol and hydrochloric acid

Yielded 4·5 grains of Strychnia.
13·73 " Brucia.

VIII. *Extract: Ignatiæ Alcohol:* 8·15 grammes

Yielded 4·93 grains of Strychnia.
8·42 " Brucia.

ON THE CONSTITUTION OF THE IMPURE OXIDES OF IRON USED IN MEDICINE.

BY FERRIS BRINGHURST.

Having accepted Query No. 25, concerning the impure Oxides of Iron, at our last meeting, I regret having left the investigation until so late that want of time has prevented its being as thorough as the question demands.

I have, however, made frequent examinations of the principal one mentioned,—viz.: the Sub-carbonate,—but give the results of two analyses only, which were of specimens obtained directly from two of our largest manufacturing chemists, and consequently most likely to be those found in our shops.

In each case, one hundred grains having been taken for examination, the number of grains given in the results, at once indicates the per-centage.

No. 1 was a very smooth, dry powder, of the usual reddish-brown color, similar in appearance to Spanish brown.

No. 1. *Analysis.* (100 *grs. taken.*)

	Grains.
Loss by washing (Sulphate and Carbonate of Soda),	7·
Additional loss by ignition (water of hydration),	11·50
Soluble in Chlor-hydric Acid (Sesqui-oxide Iron),	81·17
Insoluble in Chlor-hydric Acid or Aqua Regia (principally Silica),	·18
	99·85

No. 2. *Analysis.* (100 *grains taken.*)

	Grains.
Loss by washing (Sulphate and Carb. Soda),	10·60
Loss by ignition (water of composition, with perhaps a *little* wash-water not entirely dried out before ignition),	12·40
Soluble in Chlor-hydric Acid (Ses. Ox. Iron),	76·21
Insoluble in Aqua Regia (Silica),	·31
	99·52

Separate portions of each of the samples from those taken for analysis, after thorough washing with boiling distilled water, were treated with acid under water, in a test tube, each evolving a very few bubbles of Carbonic Acid, but not a weighable quantity, showing that any Carbonate of Protoxide existing when first precipitated is changed to Hydrated Sesqui-oxide in the process of washing and drying. It is evident, therefore, from the results above given, as I believe has been proved heretofore, that the Precip. Sub-carbonate of Iron, as found in the market, is but a Hydrated Sesqui-oxide, containing 12 per cent. of water, (therefore corresponding to that found in nature, and known as Gerthite,) besides an inappreciable amount of Carbonate of Protoxide, and from 7 to 12 per cent. (and sometimes even 40 per cent.) of impurities arising from insufficient washing of the precipitate.

It is also evident that the effervescence occurring upon the addition of acid in making Tinct. Ferri. Chlor. by the old process, was mostly owing to the Carbonate of Soda present.

In the Prussian method, however, (which is essentially that adopted in the recent issue of our Pharmacopœia,) the Sesquioxide or Sub-carbonate is dispensed with, and a much more uniform preparation yielded, which keeps well, without any deposit upon long standing.

The Sub-carbonate, (a nauseous dose, however disguised,) might be further dispensed with in medicine by the substitution of the Lactate of Iron,—a proto-salt quite soluble in the fluids of the stomach, keeps perfectly without change, and altogether offers one of the very best forms for administering Iron known to the physician, pharmaceutist, or chemist.

ON THE CONTAMINATION OF AMERICAN SULPHURIC ACID WITH ARSENIC.

BY JOHN M. MAISCH.

The query allotted to me for investigation, is: "Do any of the best samples of sulphuric and other mineral acids of American origin, contain appreciable amounts of arsenic?"

The mode of investigating the subject was as follows:

The sulphuric acid was treated directly in Marsh's apparatus, with pure zinc, and the hydrogen evolved treated in the well known manner. The nitric acid was partly saturated with pure carbonate of soda, evaporated to dryness, the residue treated with an excess of pure sulphuric acid, heated to drive off the nitric acid, re-dissolved in water, and now examined in Marsh's apparatus. The muriatic acid was diluted with water, sulphuretted hydrogen was passed through it, and the dried precipitate, after being mixed with dry carbonate of soda and cyanide of potassium, was heated in a current of dry carbonic acid gas, according to the method of Fresenius and Baba.

I have examined the three mineral acids named, manufactured by Kalbfleisch, of New York, Powers & Weightman, Rosengarten & Sons and Charles Lennig, of Philadelphia, and have in no case met with *any* trace of arsenic.

This result appears to speak well for American acids. But it must be remembered that the query is therewith not fully answered. The origin of arsenic in the mineral acids is to be looked for in the sulphur, which frequently contains traces or larger proportions of arsenic in the form of sulphides. The arsenic is volatilized when the sulphur is burned in the manufacture of sulphuric acid, and if this acid is contaminated with this poisonous metal, the nitric acid *may*, and the muriatic acid *must* contain the same. But its absence in two or three samples does not prove yet, that it may not be found in a fourth one. The only way to get at positive results is, to subject every sample to a rigid examination, which is at once a very instructing and a very easy process of manipulation.

The decision, however, at which we arrive from these experiments is, that acids of American manufacture are of the same purity, as far as arsenic is concerned, as those of foreign origin. While I have, on former occasions, occasionally met with arsenic in American oil of vitriol, yet this metal does not constitute one of the impurities of every sample, and the acids produced by the same manufacturer are likely to vary considerably in this respect.

ON THE EXTRACTION OF POTASSA FROM MARL.

BY GEORGE J. SCATTERGOOD.

The green sand or marl of New Jersey, according to analysis, contains, among other constituents, from 10 to 12 per cent. of potassa. Query. "Can this potassa be economically extracted sufficiently pure for pharmaceutical and commercial use, so as to compete in price with that derived from wood ashes?"

The experiments which have been performed in reference to this question require that it should be answered decidedly in the negative. The small proportion of potassa, and the very insoluble form in which it exists in the green sand, are insuperable obstacles to the latter ever becoming a cheap source of commercial potash. The results, however, which have been obtained are not entirely devoid of interest, since they show the effects of certain agents upon a substance whose chemical nature is as yet but little known.

The earlier analyses of green sand have shown, as above stated, the large amount of 10 to 12 per cent. of potassa. But later investigations, performed by improved methods, have not confirmed their accuracy; but, on the contrary, have pointed to the fact, that the alkali, previously estimated as potassa only, is in part soda, and that the average amount of the former throughout the green sand formation in New Jersey does not probably average more than 5 per cent.; and from but few specimens can as much as 7 per cent. be obtained. (Report N. J. State Geological Survey, 1854.)

The green sand with which the following experiments were tried contained about 6 per cent. of potassa. It is from the second or middle of the three beds into which this deposit in New Jersey has been divided, and was dug on the land of David Marshall, near Blackwoodtown, Camden Co. An analysis, performed by the general process for the analysis of soils, has given the following result, viz.:

	(1)	(2)
Insoluble Silica,	.5	48.
Soluble Silica,	48.	
Protoxide Iron,	22.74	
Alumina,	6.61	
Potassa,	5.01	6.84
Soda,	1.08	1.47
Lime,	1.975	
Magnesia,	1.375	1.
Phosphoric Acid,	4.821	
Water,	7.50	
	99.611	

The phosphoric acid was estimated as the biphosphate of magnesia. This specimen is in the usual form of small, distinct, green grains, soft enough when freshly dug to be readily crushed by the nail, but becoming harder on exposure to the air; and exhibiting under the microscope, when washed from adhering clay, a general resemblance in shape to the "casts" of the Rhizopods, and other minute marine animals. In order to separate the potassa from the green sand, I have tried several of the cheap and powerful chemical agents,—carbonic, hydrochloric and sulphuric acids, quicklime and sulphate of lime.

Carbonic acid, though a weak acid, has been stated to be one of the readiest agents in decomposing green sand. But I have not been able to obtain by it any appreciable amount of potassa, and only a trace of iron and lime. The quantities used were 100 grains of green sand, and 12 oz. of water charged with carbonic acid.

Hydrochloric acid decomposes green sand, only after being boiled with it for several hours, or after contact with it for several days in the cold. The potassa is thus obtained as a chloride—an undesirable form—and in mixture with other chlorides, the separation from which is attended with considerable expense.

When green sand is treated with sulphuric acid, the alumina as well as the potassa is dissolved, resulting in the formation of alum. As the quantity thus obtained is considerable, and as this substance has several times already been suggested as a commercial source of alum, I have tried a number of experiments to ascertain the comparative yield. 3500 grains of green sand were treated with 1750 gr. sulphuric acid (62 per cent.) diluted with water. The first crop of crystals weighed 630 gr.; the second 200 gr.; in all 830 gr. The mother liquors, still being quite acid, were mixed with 1750 grains more of green sand, and yielded at a third crop 306 gr. of alum. Again, adding a fresh portion of green sand (1750 gr.) 100 grains more were obtained, making in all 1236 gr. of alum from 1750 gr. sulphuric acid, and 7000 gr. green sand employed. A large quantity of the soft sulphate of the sesquioxide of iron was also obtained, capable of yielding a considerable amount of copperas on being reduced with metallic iron.

When the green sand had been previously roasted, the yield of alum was still greater. The protoxide of iron in the green sand being thus converted into the more insoluble sesquioxide, and thus rendered less capable of combining with the sulphuric acid. 1750 gr. sulphuric acid (62 per cent.) treated with successive portions of roasted marl, yielded 1686 gr. alum, and an amount of the sulphate of the sesquioxide of iron sufficient to produce 693 grains copperas.

When the green sand was washed from the adhering clay, which in this case constituted about 9 per cent. of it, the yield of alum was not so great. A greenish crystallo-granular mass, apparently the bihydrated sulphate of the protoxide of iron, not observed in the preceding cases, was also obtained. 1750 gr. sulphuric acid (62 per cent.) treated with successive portions of washed green sand, produced 785 gr. alum and 626 gr. copperas.

It thus appears that, with a cheap source of sulphuric acid, the manufacture of alum from the green sand of New Jersey might, perhaps, be profitably carried on. And it may possibly hereafter be found that, within the limits of this formation itself in New Jersey, the material for furnishing a cheap supply of the acid exists; in the sulphuret of iron, which is widely disseminated throughout certain sections of it, or in those compounds of iron or of alumina and iron with sulphuric acid, which give those properties so injurious to vegetation to the so called "poison," or "burning marls."

The state of combination in which the ingredients of green sand exist in it, has been considered to be that of silicates. Pelouze has called attention to the power which sulphate of lime has in decomposing glass, a mixture of various silicates. With a view to ascertain whether sulphate of lime would have any effect in removing potassa from the green sand, 50 grains of it, 100 of green sand, and 4 oz. water were mixed together, and allowed to remain in contact two or three days. Upon evaporating the liquid to dryness, 6.31 grains of solid matter were obtained, which contained only .06 gr. of potassa, about $\frac{1}{100}$ th of the amount existing in the quantity used, the remainder being principally sulphate of lime.

When green sand is treated with quicklime and water, a very small amount of potassa is obtained. 100 grains quicklime, 100 grains green sand, and 4 oz. water were mixed together, and after standing in contact for 72 hours, the liquid was evaporated to dryness. The solid matter obtained weighing $5\frac{3}{4}$ grains contained but .04 gr. of potassa; alumina, protoxide of iron, and carbonate of lime constituting the remainder.

The form of combination in which the silica, the iron, and the other ingredients exist in the green sand has not been fully determined. This substance has been regarded as essentially a protosilicate of iron. But I have noticed that, upon treating the grains with acid, without powdering them, after the green portion of them is entirely dissolved, the silica is left behind in the form of small, white grains, of the same shape as the original grains, and not in that state of fine division in which it would be if it had just been liberated from a state of combination. These grains of silica, after ignition, are readily soluble in a cold solution of potassa, from which facts it is inferred that the silica has not been combined with iron, &c., as a silicate; and that the green sand should not be considered as a mixture of various silicates. Whether these ingredients are in a state of combination at all, or merely in intimate mixture, remains unascertained.

It would appear that during that remarkable change which has resulted in the formation of these "casts" of minute marine animals, which the researches of Ehrenberg and the late Prof. Bailey have shown these green grains to be, the silica has been deposited in the cavity of the shell upon or during the decay of the animal; while the green colored matter, consisting of iron, alumina, potassa, &c., has been gradually deposited in the shell around it by a kind of petrifactive process during the removal of its carbonate of lime.

ON THE INTERNAL REVENUE LAW.

BY EDWARD PARRISH.

Perhaps no law was ever passed by our National Legislature which was more readily and unanimously accepted by the people than the Internal Revenue Law, approved July 1st, 1862. The Committee of Ways and Means of the House and the Finance Committee of the Senate had separately considered it, in all its multifarious details, during protracted sessions held almost daily for months; they had been closeted with delegations representing the numerous commercial and manufacturing interests of the country, and with a single eye to establishing and maintaining the credit of the government, and to distributing equitably the burdens entailed upon the people by the great national struggle, they matured this voluminous Revenue Law; it then passed the ordeal of Committees of the Whole, not without many alterations, curtailments, and extensions, then through Committees of Conference, in which the differences between the two Houses were adjusted, and finally the whole became the law of the land, and the duty devolved on the Executive to put it in force.

It is well known to the Association that the writer, as a representative of the Philadelphia College of Pharmacy, was instrumental in modifying that part of the draft of the law as originally reported, which relates to the tax upon medicines, so as to protect the Pharmaceutist from undue annoyances in his business, and to define and enumerate unmistakably the medicines subject to taxation. The question now submitted to him refers to the operation of the law as affecting the interests of the druggist and pharmaceutist, and in what points, if any, its revision would relieve the trade of unnecessary burdens without detriment to the revenue, and in what the revenue is likely to suffer from fraud or from a misunderstanding of the law.

These inquiries are perhaps prematurely put at this time, for the vast machinery of the law has but just begun to move; and where it does move fully, the officers appointed for its execution are but imperfectly acquainted with their duties, and carry out its provisions differently in different localities. These differences are gradually being adjusted by the decisions and instructions of the Chief Commissioner, and it is perhaps wiser to allow these inequalities and inconveniences to remain till thus naturally adjusted, than by any further legislation to forestall the mature judgment which can only result from repeated experience.

The *Stamp tax* is the most easily collected and perhaps the least onerous of the burdens imposed by the law. As far as it affects the trade in medicines, it has proved less oppressive than some were disposed to anticipate. Under the wording of the law as finally adopted and at present enforced, no medicines are required to be stamped but those which are of secret composition, or are strictly proprietary. No interference is designed either with crude drugs, or with legitimate preparations, either long established, or introduced as the result of the progress of pharmacy. The effect of the tax upon proprietary medicines has not proved disastrous to any of these as far as I know; this class of preparations is notoriously profitable to the manufacturers in proportion as the sale is extensive,—the retail prices being arranged so as as to allow large discounts to dealers, and leave a handsome profit to the manufacturer. Though the 4 per cent. stamp tax upon the retail prices of these is practically from 6 to 8 per cent. upon the price realized by the manufacturer, yet, this being divided between the dealer and manufacturer, does not seriously interfere with the profitable pursuit of the business. If the fact be also taken into consideration that the manufacturer of a proprietary medicine is liable to the same *ad valorem* tax upon his products as most other manufacturers, namely, 3 per centum on that value, it will be seen that he pays to the Government a tax of from 9 to 12 per cent. on his actual sales, besides his annual license of ten dollars as a manufacturer, or fifty dollars as a wholesale dealer. How far the law has been executed in regard to this class is an inquiry of much interest. The stamp is, I believe, now generally affixed by the manufacturer, although so considerable a portion of these medicines found on the shelves of the retailer, from having been issued before the law came into operation, do not bear this evidence of compliance with its requirements. The *ad valorem* tax is believed to be less uniformly paid, and without positive knowledge on the subject, I am inclined to suspect that many who manufacture these nostrums largely are not regarded by the appraisers as manufacturers within the meaning of the law, and escape the tax. The evasions of the stamp duty are, I suspect, chiefly among those druggists whose proprietary articles and perfumery form but a small part of their business; this class, probably sometimes through ignorance, fail to comply with the legal requirements. The extent of the application of the law, though certainly not liable to misunderstanding by any who properly study its language, is not perhaps so generally known as to insure the revenue against loss by the occasional issue of articles coming under its meaning, without the legally required stamp. This is rendered more possible by the fact that no Government officer is as yet charged with the supervision of this department of the law.

The prosecution of a few such, and the recovery of the fine of ten dollars prescribed as the penalty for issuing any article mentioned in schedule C without the appropriate stamp, will probably operate as the surest corrective of the present neglect of the legal requirement.

The sale of perfumery, hair oils and cosmetics by the ounce or in larger quantities, in bulk, has been the subject of inquiry as to how far the law requires the stamping of these. It is the practice of some to affix a stamp to the shop bottle of cologne according to the retail price of its contents, and to replace this by another each time the bottle is refilled, but this conscientious observance of the law is by no means common, and the revenue is not benefitted by sales of this description, except in a very few instances, though the language of the law requires that "every packet, box, bottle, pot, phial or other inclosure, containing any essence, extract, toilet water, cosmetic, hair oil, pomade, hair dressing, hair restorative, hair dye, tooth wash, dentifrice, tooth paste, aromatic cachous, or any similar articles," shall be duly stamped according to its value. How far the *spirit* of the law requires that trammels should be placed upon small transactions of the kind alluded to, may indeed be questioned; and this is one of the points in the law now demanding authoritative explanation.

A new feature of the whole subject is presented by the adoption of the Act of March 3, 1863, which is not generally contained in the pamphlet copies of the law in circulation. Section 27 of this Act provides, that any person who shall offer for sale after 30th of September (instant), any of the articles named in Schedule C. (proprietary medicines and perfumery,) whether the articles so offered *are imported or are of foreign or domestic manufacture, shall be deemed the manufacturer thereof*, and subject to all the duties, liabilities and penalties imposed in regard to the sale of such articles without the use of the proper stamp or stamps. Thus it appears that every importer of foreign goods, every jobber, and every retailer, is liable to fine if he offers for sale even foreign articles, such as he may now have on hand in large quantities, without appending to each the appropriate stamps. The original packages of these will have to be opened in order to effect this, or by an arrangement which shall be satisfactory to the Chief Commissioner; some assurance must be given that each bottle or packet will be stamped before being retailed.

In relation to *licenses*, the Revenue Law affects the druggist and pharmaceutist as other dealers in merchandise, except in one particular. The ten dollar retailing license and the fifty dollar wholesaling license cover all the ordinary departments of the trade, including its incidental manufacturing, except the sale of spirituous liquors, some of which are as much articles of *materia medica* as any other merchandize sold by the druggist. To sell "liquors, wines, rectified cordials or bitters, Schiedam Schnapps, they (the druggists) must take out an additional license as retail dealers of liquors;" so decides the Commissioner of Internal Revenue, and, as a consequence, a very large majority of the retail pharmaceutists now refuse to their customers articles which, perhaps in most instances, they can only obtain from other sources with great difficulty. The license to retail spirits costs twenty dollars annually, which is more than the yearly profit realized on this class of sales by many respectable stores, and more than pharmaceutists generally are willing to pay for the privilege. The inconvenience to the public is especially felt in cases of emergency, when other respectable repositories of these articles are inaccessible; the applicant perhaps, after summoning the pharmaceutist from his bed, is informed that the brandy relied upon to relieve suffering is not within the range of his legally authorized merchandize. To the wholesale druggist or jobber, the one hundred dollar license operates as a serious drawback to a legitimate trade in these articles, and some have believed it their interest to send this portion of their orders to a licensed dealer in liquors, or to limit their sales to three gallons or less in a single order, by which they place themselves among the retailers of spirits, though they may repeat the sales of three gallons as often as they may desire to the same party. I am aware of the difficulty of making any exception in favor of the druggist and pharmaceutist in regard to the sale of spirituous liquors, as being liable to serious abuse, and tending to divert the trade in these important, and often pernicious articles, into his hands, to the disadvantage of others who have invested their capital in this branch of business, and pay the Government liberally for the privilege; and yet it is certainly cause of regret that so large a proportion (perhaps nearly all) of our fraternity find their pecuniary interest at variance with what might be regarded as their duty to the medical profession and the community. That unlicensed pharmaceutists will evade the law by obtaining for their sales the sanction of a prescription from some one claiming the privileged title of M. D., or by other and even less justifiable subterfuges, is what experience teaches us to expect, even from some of the pharmaceutical fraternity.

A consideration which adds to the difficulty of the supply of spiritous liquors for use in sickness is, that there is so little regard paid to their purity and genuineness by most dealers, that few physicians would feel confidence in directing their patients to an ordinary licensed dealer or to a tavern-keeper for brandy or wines, the quality of which is as important as of any class of remedies prescribed; besides, the law specifically forbids the sale of liquors by tavern-keepers, for removal from the premises, or by other retailers to be drank on the premises, so that the purchaser is obliged to seek a store of the latter class, sometimes at a great distance, in order to satisfy what may be a very legitimate and urgent demand. That this question, by discussion and by authoritative decisions and instructions from the Chief Commissioner, may reach a practical solution, is one object in view in the considerations thus presented.

In conclusion, it should be remarked that the prosperity of druggists and pharmaceutists, as of most other manufacturers and dealers, consequent on the abundance of currency and the immense demand for our merchandize created by the war, have reconciled the enormous duties on foreign merchandize, and the heavy taxation imposed by the Internal Revenue Law. When gold shall again resume its place as the basis of our commerce, and the avenues of trade are again crowded by the returned soldiers, it may be found the part of wisdom to lessen, as far as practicable, the burdens of taxation, and thus relieve the reaction which must accompany a return to the normal state of peace.

ON ÆSTHETICAL PHARMACY.

BY FREDERICK STEARNS.

The graduate, while versed in theoretical and practical pharmacy, as taught in the schools, is left to chance circumstances in acquiring that knowledge and those habits which a proper preliminary understanding of the commercial, ethical and æsthetical elements of education would endow him, and upon which his professional position in the community, and his pecuniary success, in no small degree depend.

Commercial education, as applied to the tyro in our trade, is a subject fit to enlarge upon by itself. Ethical education Mr. Parrish gave some valuable hints upon, in a paper some years ago presented to the Association.

Æsthetical education, a department worthy of considerable elaboration, is one upon which I propose to offer the following.

When we reflect how naturally the uninformed public judges men—business men—by external appearances, it is obvious that the cultivation of good taste, and an appreciative sense of the beautiful, should be no unimportant element in pharmaceutical education, and upon the proper exercise of which, pecuniary success, and good social position are to a certain extent the direct results.

From ignorance of æsthetics, as relating to our art, many never reach that position in the public eye which their real talents should command, and of which, perhaps, others really less worthy in every other sense may rob them.

I hold that, as a business man, the pharmaceutist is entitled to the benefits of all legitimate methods of enriching himself; that he is not altogether to be considered the self-sacrificing conservator of public health, a pattern of meek benevolence, or bound to hold his light continually under a bushel for fear of violating professional modesty; and because the quack pharmaceutist may, without much real merit or character, by shrewd business tact, and the careful consideration of the æsthetical in winning public favor, gain success, it does not follow that the really scientifically educated pharmaceutist may not cultivate those same habits of good taste, as an addition to his more solid acquirements.

Æsthetical laws apply to the ornamentation and convenient arrangement of our stores and laboratories, to the display of our wares, and, above all, to the general management of business, the careful elaboration of which tends beside to refine the man, to develop the more genial qualities of human nature, the social courtesies that help to place him among gentlemen, and to add dignity to his chosen profession.

The customer most indifferent to the skilful, scientific details of the labors of a dispenser, will notice and commend the simple elegance of a package nicely wrapped, or a bottle neatly finished, and from such the inference is apt that, where elegance is *constitutional*, and neatness *chronic*, there skill lives!

The fittings and the furniture of a dispensing pharmacy afford an opportunity to study and apply æsthetic rules, more so to my mind, than in the ornamentation of any other place of business.

It is a matter of some moment how to combine usefulness and elegance in such fittings, and we find too many examples of proprietors who, actuated by the laudable desire of having their premises unique or original, violate the simplest æsthetical rules by over-doing and over-crowding, or else carry their designs into the fantastic and absurd.

The following may be an approximation to the true æsthetic idea in such matters.

In those portions of the permanent fixtures of a store comprised in shelving, cornices, drawers, counters, casing, etc., where capital is limited, employ straight lines; classical mouldings, few and simple if made in cheap woods, white only in such wood; do not strive to imitate oak, rosewood, or mahogany with paint.

When greater expenditure is allowable, the same general rules carried out in real fine woods, or further yet, the working of the cornices in bold arches or curves and projections, the employment of carvings not too elaborate, panel work, brackets, etc., serve to display the liberality of a proprieter within æsthetic rule.

I should designate that style of ornamentation where gilded mouldings, and the profuse employment of embossed stucco work prevails, as the "Steamboat style," as vulgar as it is unreal. The great improvement made of late years in glass shop furniture, in quality of material, and simple beauty of form, leaves hardly more to be desired.

My idea is, a few good bottles rather than many cheap ones; nor should shelving be cumbered with glass or porcelain jars for ornament merely.

The shop label has been the subject of endless changes, until now the elegance of some of the forms is only matched by brilliancy and durability where glass and porcelain are used. At the prescription counter, a happy adaptation of means to ends should be studied, in the conveniences of it; the dispensing bottles small, in order to be in sufficient numbers; the various necessary appliances near at hand; no room lost in it or under it.

I doubt whether the usual practice of surrounding the top of the prescription counter with a close rail or case to free the operator from external observation while at work, compensates for the careless habits it may lead to, and the dirt corner it affords; better a rather high counter, marble top perfectly open, serving to display skilful and graceful manipulatory work, and clean utensils, for these are æsthetic. Arrange the position of drawers and shop bottles with reference to the principal working centre, or scale of the shop; that is, having those articles most used nearest to it, not by any arbitrary alphabetical rule, for the first aids the rapid dispatch of business, and the last is surely no stimulus to memory. Do not paper walls, for no matter how nicely done, it has a cheap look; better a pure white, even with white fixtures; it is a fine offset to dark ones.

In fresco or calcimine ornamentation use soft colors, no strong, exciting ones; by exciting ones I mean such high, bright ones as will produce upon the eye of an excitable person the same effect, comparatively, that the red cloth does on the bull. Above all, do not allow your ambitious fresco-artist to crowd impossible flowers or fantastic scroll work into impossible places: simple panel work in delicate tints is to be preferred.

If you cannot afford marble or tile for flooring, cover it with something, if nothing better than rugget, or oil cloth: in the latter choose the stone, or tile colors and design—not the flower patterns.

There is one class of fixtures you can hardly over-crowd a store with; that is good show casing, either flat or upright. As now made, in metallic frames and fine plate-glass, they are in good taste almost everywhere. Serve to display goods to the best possible advantage; afford the means of developing the artistic gracefulness of grouping goods which may exist in assistants, and which again are economical; for I have always found that goods well displayed, in a great measure sell themselves.

Show windows, open, fine quality of glass, and always clean. Show bottles, few, but choice; colors, rare and light. Do not crowd a window with goods; rather let the front be as a show-case lid, to show a nicely arranged store within.

The foregoing, relating to permanent fixtures, are mere skeleton ideas, which can, of course, be elaborated in a variety of ways, all within æsthetical rules, and due regard to harmony of arrangement and general design.

A still richer field for the organization and operation of æsthetical rules lies in the every day labors, and in all the manipulations of the store, where everything done, or every item dispensed, is to teach by its neatness, nicety, simplicity, elegance, or beauty, a lesson to your customer in the science of the beautiful.

Æsthetical should be your choice of dispensing glass, in form, quality, and finish; of twines, of corks, of powder, or wrapping paper—these last in reference to color, cutting and shape.

Elegant in appearance should be all medicinal preparations: your syrups, tinctures, wines, etc., clear, clean and bright, and never dispensed otherwise.

The manipulatory hand work at the prescription counter should be not only well, but neatly and gracefully done. I consider the perfect mixing of a pill mass, the brightness of a solution or lotion, the evenness of consistence of an ointment, etc., etc., all so perfect as to exhibit skill and labor as bordering upon the æsthetic.

And, again, in externals: powders, equally folded in fair paper nicely cut, enveloped or boxed, a perfect fit; pills carefully finished, coated or powdered, boxed in nice shapes; the ointment jar or gallipot of a nice quality, covered, and of convenient sizes and shapes; dispensing bottles of various kinds, of better qualities and selected finish; and so with corks and seals.

These and a hundred other excellencies in dispensing, must be developed by acquired experience in æsthetic rules.

Then, again, labels. Nowhere in Pharmacy can greater good or bad taste be shown than in dispensing labels; few even of printers or engravers can make a passable one. In my own experience I have met with but one real genius who, as a "typo," understood the harmonious relations of type so as to make a really elegant label; while engravers and lithographers, who are not compelled to submit to the arbitrary forms of type in arranging the form or contents of a label, produce but little choice work.

It is almost impossible to offer suggestions as to how they should be done. Experience is the best teacher, aided by the comparison of those used by competing pharmaceutists. My idea is that in labels simplicity of form and borders, terseness of wording, truth in explaining merits or composition of material, plain directions, fine quality of paper and ink, and good press-work, should all be looked to.

The manner of holding a graduate, of handling a spatula, of rolling a pestle, of corking a bottle, of wrapping it, of tying a package, of handing it to a customer, of taking and paying change, can all be benefitted by a touch of the æsthetic.

In the introduction of specialities and their putting up, is a fruitful field of æsthetic taste. Doubtless, most of my confreres of the Association have studied and reflected upon this subject themselves, and to those only who may not have done so, and to the beginner in business life, does the subject apply.

So on, by earnestly and carefully feeling the way along, day by day, one may find continually new methods and new ways of cultivating the beautiful in the details of laboratory and shop, and in general management of business.

Detroit, Sept. 1st, 1863.

A PLEA FOR THE HANDMAIDEN.

BY EDWARD PARRISH.

We often hear Pharmacy represented as the *handmaid of medicine,* and, acting on this idea, some of our titled colleagues of the Medical Profession, *par excellence*, would exclude the Pharmaceutist from the great temple of medicine, or if they would vouchsafe him an entrance at all, would shut him out in the servant's hall or the scullery. On what grounds this assumed superiority of the Doctors is founded, we may, perhaps, profitably inquire; if we go to the past we shall find that the Pharmaceutists of to-day, equally with the Physicians, represent the ancient votaries of Æsculapius. If it be true, as we are told, that Hippocrates and Galen, with not a few of their eminent disciples and followers, dispensed their own compounds, many of them keeping open shops, while all were perhaps more concerned with Materia Medica and Pharmacy, than with either Anatomy, Physiology, Pathology, or Surgery, albeit this latter pertained chiefly to the *barber*, who still represents by his trade insignia the ancient blood-letting propensities of the craft,—may we not claim at least as ancient and honorable an origin as any branch of the healing art? Measured by the standard of the *present*, we must indeed own to being occupied with the ignoble pursuits of business; we soil our hands with labor, and even demean ourselves with the insignia of self-seeking trade; yet we do produce something wherewith to benefit mankind, and is not the producer, at last, the true hero of this nineteenth century? What would medical art be now, but for the Scientific Pharmacy which evolved Morphia and Quinia, Ferrum redactum, and the Valerianates, and which has added to our new Pharmacopœia, despite the conservatism which controlled its authors, one hundred and eleven new preparations, for the amelioration of suffering and the cure of disease?

These reflections have passed through my mind in conning over some of the flagrant abuses which distinguish the conduct of Physicians in our large cities, toward their co-laborers, the Pharmaceutists. It is a common observation, that those practitioners who move in what are called "aristocratic circles," and who pander to the follies of fashionable life, are most addicted to disregarding the recognized amenities of professional intercourse, especially where their humble compeers, the Pharmaceutists, are concerned. Inflated with ideas of their influence and power, and fortified by the greatness of their fees, these professional nabobs delight in patronizing some one renegade Pharmaceutist, who, by the well plied arts of the courtier, ministers to their vanity, while a delicately administered *douceur* occasionally testifies a grateful appreciation of the patronage bestowed. Some more honest, than the rest, perhaps, habitually resort to a single dispensing establishment, because they really are persuaded that their prescriptions are better dispensed than at the numerous shops of respectable graduates in Pharmacy, who stand unimpeached, either in the matter of honesty or skill. One of the greatest defects in the education of professional men is, that for want of that contact with men which a business education in early life affords, they so often do not know how to estimate the pretensions of those who lay claim to superior knowledge or skill —to use a common phrase, they are *gullible*. This trait is conspicuous in certain clergymen, who are ready, on the strength of a single apparent cure, to give their influence in favor of the pretensions of some unprincipled quack, whose groundless assumptions would at once vanish into thin air before the steady light of common sense. In these physicians it is observable in the willing credence they give to the extraordinary assertions of the pharmaceutical cicerone, to whose guidance they have willingly lent themselves in their dubious course through the labyrinths of Materia Medica; meanwhile, the knowing ones indulge a feeling between indignation and contempt for the practitioner who is so easily led by the nose, and pity for the patients who are the innocent victims of his infatuations. When we are "hectored" by our medical friends because some sufferer has been relieved of a cold or a colic by a timely dose administered "over the counter," without having paid a fee to some one entitled to exact it, we may point him to the numerous graduates of medicine, who have an office adjoining some corner shop belonging to them, where their prescriptions are compounded by a so-called apprentice or clerk, who is paid, perhaps, less than a stevedore on the wharf, and whose instructions are, to add the doctor's fee to the cost of the medicine, whenever practicable. Or we may direct the attention of our medical complainers to more prominent physicians, who send their prescriptions to a certain store in the neighborhood, the depository of their private recipes, and recommended by no single merit over nearer and more respectable dispensing stores.

If a poor sufferer comes into my shop asking relief from the pangs of tooth-ache, I feel no hesitation in relieving him if I can, and indeed few acts of my daily routine, give me more satisfaction. For this I was never assailed by the nearest dentist with the charge of having interfered with his prerogative. Neither, on the same grounds, do I hold myself accountable to the medical faculty for exercising so much humanity and common sense as will help out a suffering fellow mortal, without resort to the complexities of his diagnosis, prognosis and other technicalities.

Let me not be charged with hostility to the medical profession. My earliest recollections and life-long associations have taught me to love and honor the high-minded physician who, with zeal for both science and humanity, devotes his life to the most laborious and responsible of pursuits; but this very respect for the Physician as he *should be*, induces me to place a proper estimate upon the Physician as he too often *is*, and to protest, in the name of common honesty and fair dealing, against the unprofessional favoritism to which I have alluded as being notorious, especially in our large cities. And now, on entering the second decade in the history of this Association, let us assert for American Pharmacy the claim, founded on a common origin and kindred objects, to an equal and independent place,—no longer as a handmaiden, but as a modest and docile sister,—beside the more numerous and distinguished branch of the medical family.

May we all strive to *deserve* such a position.

CONSTITUTION

OF THE

AMERICAN PHARMACEUTICAL ASSOCIATION.

PREAMBLE.

Whereas, The advancement of pharmaceutical knowledge, and the elevation of the professional character of Apothecaries and Druggists throughout the United States, are dear to us in common with all well disposed pharmaceutists ; and *whereas*, a large portion of those in whose hands the practice of pharmacy now exists, are not properly qualified for the responsible offices it involves, chiefly by reason of the many difficulties that impede the acquirement of a correct knowledge of their business :

Therefore, We, the members of a Convention now met at Philadelphia, [September, 1852,] composed of Apothecaries and Druggists from different sections of the Union, and from all the Colleges and Societies therein existing, with the object of deliberating on the condition of our profession, do hereby resolve and constitute ourselves into a permanent Association, to meet annually, at such time and places as may hereafter be determined, for more effectually accomplishing the objects for which we are now assembled, and do now adopt the following

CONSTITUTION.

ARTICLE I.

This Association shall be called the " American Pharmaceutical Association." Its aim shall be to unite the educated and reputable Pharmaceutists and Druggists of the United States in the following objects :

1. To improve and regulate the drug market, by preventing the importation of inferior, adulterated or deteriorated drugs, and by detecting and exposing home adulteration.

2. To establish the relations between Druggists, Pharmaceutists, Physicians, and the people at large, upon just principles, which shall promote the public welfare, and tend to mutual strength and advantage.

3. To improve the science and the art of pharmacy by diffusing scientific knowledge among Apothecaries and Druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.

4. To regulate the system of apprenticeship and employment so as to prevent, as far as practicable, the evils flowing from deficient training in the responsible duties of preparing, dispensing and selling medicines.

5. To suppress empiricism, and, as much as possible, to restrict the dispensing and sale of medicines to regularly educated Druggists and Apothecaries.

Article II.—*Of the Members.*

Section 1. Every Pharmaceutist or Druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, who, after duly considering the objects of the Association and the obligations of its Constitution, is willing to subscribe to them, is eligible to membership.

Section 2. The mode of admission to membership shall be as follows:—Any person eligible to membership may apply to any member of the Executive Committee, who shall report his application to the said Committee. If, after investigating his claims, they shall approve his election, they shall, at the earliest time practicable, report his name to the Association, and he may be elected by two-thirds of the members present, on ballot. Should an application occur in the recess, the members of the Committee may give their approval in writing, which, if unanimous, and endorsed by the President, shall constitute him a member, and the fact be reported to the Association at the next succeeding meeting.

Section 3. No person shall become a member of this Association until he shall have signed the Constitution, and paid his annual contribution for the current year. All persons who become members, shall be considered as permanent members, but may be expelled, for improper conduct, by a vote of two-thirds of the members present at any annual meeting.

Section 4. Every member shall pay into the hands of the Treasurer the sum of two dollars, as his yearly contribution, and is liable to lose his right of membership by neglecting to pay said contribution for three successive years. Members shall be entitled on the payment of three dollars, to receive a certificate of membership, signed by the President, Vice-Presidents and Secretary, covenanting to return the same to the proper officer on relinquishing their connection with the Association.

Section 5. Every local Pharmaceutical Association shall be entitled to five delegates in the annual meetings, who, if present, become members of the Association, on signing the Constitution, without being balloted for.

Section 6. Pharmaceutists, Chemists, and other scientific men who may be thought worthy of the distinction, may be elected honorary members upon the same conditions and under the same rules as appertain to active members. They shall not, however, be required to contribute to the funds, nor thall they be eligible to hold office, or to vote at the meetings.

Section 7. Members who have paid their annual contributions for ten successive years shall be considered life members. and exempt from their yearly payments, and entitled to a certificate to that effect.

ARTICLE III.—*Of the Officers.*

Section 1. The officers shall be, a President, two or more Vice-Presidents, a Recording Secretary, a Corresponding Secretary, and a Treasurer, who shall be elected annually, and shall hold office until an election of successors.

Section 2. The President shall preside at the meetings, and administer the rules of order usual in deliberative assemblies. He shall nominate all special committees, except a majority of the members present direct a resort to balloting or other means.

He shall sign the certificates of membership, approve all foreign correspondence, and countersign orders on the Treasurer.

He shall present at each annual meeting a report of the operations of the Association during the year, with such information pertaining to its condition and prospects, and the object it has in view, together with such suggestions for its future management, as may seem to him proper.

Section 3. In case of the temporary absence or inability of the President, his duties shall devolve on one of the Vice-Presidents, in the order of their names.

Section 4. The Recording Secretary shall keep fair and correct minutes of the proceedings of the meetings, and carefully preserve on file all reports, essays, and papers of every description received by the Association, copies or abstracts of which shall be furnished for publication as may be required.

He shall furnish the chairman of every special committee with a list of its members, and a copy of the minute of its appointment, and shall notify every member of the time and place of each annual meeting. He shall be a member of the Executive Committee.

Section 5. The Corresponding Secretary shall conduct all correspondence directed by the Association, and reply to all communications addressed to it in its recess. He shall, from time to time, address local Associations, members and others possessed of information likely to be of interest to the Association, and report such correspondence to the Committee on the Progress of Pharmacy, of which he shall be a member.

Section 6. The Treasurer shall collect and take charge of the funds of the Association, and shall also hold and issue the certificates of membership. He shall pay no monies, unless by the order of the chairman of one of the standing or of a special committee, authorized to appropriate funds of the Association, such order to be countersigned by the President.

He shall present a statement of his accounts at each annual meeting, that they may be audited. He shall also report to the Executive Committee, previous to each annual meeting, the names of such members as have failed to pay their annual contributions for three years, and also the names of such as have failed to return their certificates of membership after having been officially disconnected with the Association, and duly notified to do so.

ARTICLE IV.—*Of the Standing Committees.*

Section 1. There shall be two standing committees elected annually—an Executive Committee, and a Committee on the Progress of Pharmacy. They shall each consist of five members, and shall elect their own Chairman.

Section 2. The Executive Committee, of which the Recording Secretary shall be one of the members, shall have charge of the revision of the roll, the investigation of applications for membership, the election of members in the recess, and the publication of the Proceedings. They shall report at each meeting a revised roll of members, with appropriate notices of deceased members; also the names of any who, having become disconnected with the Association, refuse to return their certificates of membership, as provided by this Constitution.

The annual publication of the Proceedings shall contain the corrected roll of members, full minutes of the several sittings, the Reports of the President and of the Committees, together with such addresses, scientific papers, discussions, notices of new processes, and preparations, as the Executive Committee may deem worthy of insertion. At least one copy shall be furnished each member of the Association.

Section 3. The Committee on the Progress of Pharmacy, of which the Corresponding Secretary shall be one of the members, shall report annually to the Association on the improvements in Chemistry, Practical Pharmacy and the collateral branches, on any new works bearing on these subjects published in this country or in Europe, on the condition of the drug-market, and the quality of drugs and manufactured articles, whether of foreign or domestic production, found in commerce.

ARTICLE V.—*Of the Meetings.*

Section 1. The meetings shall be held annually, or as the Association may from time to time determine; provided that, in case of failure of this from any cause, the duty of calling the Association together shall devolve upon the President, or one of the Vice-Presidents, with the advice and consent of the Executive Committee.

Section 2. At the opening of each annual meeting, the President, or, in case of his absence, one of the Vice-Presidents, shall call the meeting to order, and preside until after an election of officers. In case the President and Vice-Presidents are absent, this duty shall devolve on the Chairman of the Executive Committee, or, in his absence, on any member chosen by vote of those present.

In the absence of the Recording Secretary, the President shall appoint a Secretary, pro tempore.

The order of business at the first session of each annual meeting shall be as follows:

1st. The appointment by the President of a committee of three persons to examine credentials, and report the names of those duly accredited.

2d. The Executive Committee shall report the names of new members, and of persons present, recommended for membership, who shall be immediately ballotted for.

3d. The roll of those in attendance, as thus completed, shall be called by the Secretary.

4th. The reports of the Standing and Special Committees shall be read by their titles, or in full, and laid on the table for future consideration.

5th. A committee to nominate officers for the ensuing year shall be appointed, consisting of one nominated by each delegation in attendance, and three members appointed by the President, from among those not delegated, to report at the opening of the next session.

The first session shall close with the reading of the President's Annual Report, and referring any portions requiring the action of Committees.

After the first session, the order of business shall be determined by the nature of the subjects presented, and by the consent of the majority.

Section 3. During periods fixed by vote for scientific discussion and the exhibition of specimens and processes, the ordinary rules of parliamentary bodies shall be suspended, but, at other times, shall be enforced by the presiding officer, from whose decisions, however, appeals may be taken if required by five members, and the meeting shall thereupon decide without debate.

A motion reduced to writing, and seconded, shall be open to discussion, and, while it is before the meeting, no motion shall be received, unless to amend, divide, commit, to lay on the table, postpone, or to adjourn; and a motion to adjourn shall be decided without debate.

On the call of any member, the yeas and nays shall be ordered, when every member shall vote, unless excused by a majority of those present, and the names and manner of voting shall be entered on the Minutes.

ARTICLE VI.

This Constitution may be altered or amended by a vote of three-fourths of the members present at any regular meeting, and notice to alter or amend the same shall be given at least one sitting before a vote thereupon.

Forms to be signed by Applicants for Membership.

Approving of the objects of the American Pharmaceutical Association, I am desirous of joining it in membership; and having read its Constitution, I hereby signify my approval of it, and subscribe to it.

I hereby agree to return my certificate of membership in the American Pharmaceutical Association to the Treasurer of that body, if I shall hereafter cease to be connected in membership with it.

Testimonials.

The undersigned being personally acquainted with testify to his moral character, his skill as a practical Druggist and Pharmaceutist, and his professional probity and good standing, and they recommend him for membership in the American Pharmaceutical Association.

Name.	Profession.	Address.

The undersigned, Executive Committee of the American Pharmaceutical Association, approve the election of to membership.

Approved.

President.

date.

ROLL OF MEMBERS.

(Deceased Members in Italics.)

HONORARY MEMBERS.

Daniel B. Smith,	Philadelphia,	Pennsylvania,	1856
Thomas Farrington,	Boston,	Massachusetts,	1856
Montgomery J. Bailey, M.D.,	New York,	New York,	1856
George B. Wood, M. D.,	Philadelphia,	Pennsylvania,	1857
Franklin Bache, M. D.,	Philadelphia,	Pennsylvania,	1857
Elias Durand,	Philadelphia,	Pennsylvania,	1857

ACTIVE MEMBERS.

Henry T. Cummings,	Portland,	Maine,	1853
Edmund Dana, Jr.,	Portland,	Maine,	1859
Walter F. Phillips,	Portland,	Maine,	1859
William Atwood,	Portland,	Maine,	1859
Sargent P. Coe,	Portland,	Maine,	1859
N. S. Harlow,	Bangor,	Maine,	1860
John G. Cook,	Lewistown,	Maine,	1859
William Baker,	Brunswick,	Maine,	1859
J. R. Carpenter,	Calais,	Maine,	1861
Charles A. Tufts,	Dover,	New Hampshire,	1856
O. Gilman Dort,	Keene,	New Hampshire,	1858
Charles A. Merrill,	Exeter,	New Hampshire,	1858
George S. Kendrick,	Lebanon,	New Hampshire,	1858
Joseph H. Thacher,	Portsmouth,	New Hampshire,	1859
Edward H. Rollins,	Concord,	New Hampshire,	1859
John F. Rollins,	Concord,	New Hampshire,	1859
Julius Cene,	Concord,	New Hampshire,	1859

James Morgan,	Concord,	New Hampshire,	1859
George Moore,	Great Falls,	New Hampshire,	1859
Rufus W. Stevens,	Great Falls,	New Hampshire,	1859
George L. Dearborn,	New Market,	New Hampshire,	1855
S. P. Peck,	Bennington,	Vermont,	1853
J. C. Bingham,	St. Johnsbury,	Vermont,	1853
Chauncy L. Case,	Brandon,	Vermont,	1859
E. A. Morse,	Rutland,	Vermont,	1859
E. A. Pond,	Rutland,	Vermont,	1859
L. L. Dutcher,	St. Albans,	Vermont,	1859
Frederick Dutcher,	St. Albans.	Vermont,	1859
Samuel M. Colcord.	Boston,	Massachusetts,	1852
Samuel R. Philbrick.	Boston,	Massachusetts,	1852
Daniel Henchman,	Boston,	Massachusetts,	1853
Thomas Restieaux,	Boston,	Massachusetts,	1853
Andrew Geyer,	Boston.	Massachusetts,	1853
T. Larkin Turner,	Boston,	Massachusetts,	1853
Henry W. Lincoln.	Boston.	Massachusetts,	1853
Joseph Burnet,	Boston,	Massachusetts,	1852
William A. Brewer.	Boston,	Massachusetts,	1853
Thomas Hollis,	Boston,	Massachusetts,	1853
Ashel Boyden,	Boston,	Massachusetts,	1853
Henry D. Fowle.	Boston,	Massachusetts,	1853
James S. Melvin,	Boston,	Massachusetts,	1855
William W. Goodwin.	Boston,	Massachusetts,	1853
Charles T. Carney,	Boston,	Massachusetts,	1853
Robert R. Kent,	Boston,	Massachusetts,	1855
Alvah Littlefield,	Boston,	Massachusetts,	1856
Augustus P. Melzar,	Boston.	Massachusetts,	1856
Charles H. Atwood,	Boston,	Massachusetts,	1856
Emery Souther,	Boston,	Massachusetts,	1856
James Gorden,	Boston,	Massachusetts,	1857
Theodore, Metcalf,	Boston,	Massachusetts,	1857
David Roberts.	Boston,	Massachusetts,	1858
William Brown,	Boston,	Massachusetts,	1858
Oliver H. Webber,	Boston,	Massachusetts,	1858
George D. Towne,	Boston,	Massachusetts,	1858
D. B. Kidder,	Boston,	Massachusetts,	1858
Andrew R. Fox,	Boston,	Massachusetts,	1858
Granville M. Clark,	Boston,	Massachusetts,	1858
George D. Ricker,	Boston,	Massachusetts,	1858
C. H. Lyon, Jr.,	Boston,	Massachusetts,	1858

I. Bartlett Patten,	Boston,	Massachusetts,	1858
Leopold Babo,	Boston,	Massachusetts,	1859
John C. Howe,	Boston,	Massachusetts,	1859
Levi G. Dodge,	Boston,	Massachusetts,	1859
William J. Cutler,	Boston,	Massachusetts,	1859
E. Waldo Cutler,	Boston,	Massachusetts,	1859
B. F. Brown,	Boston,	Massachusetts,	1859
William D. Miller,	Boston,	Massachusetts,	1859
Theodore S. Harris,	Boston,	Massachusetts,	1859
George H. Chapman,	Boston,	Massachusetts,	1859
Theodore Wheeler,	Boston,	Massachusetts,	1859
Orlando Tompkins,	Boston,	Massachusetts,	1859
Isaac T. Campbell,	Boston,	Massachusetts,	1859
Thomas Doliber,	Boston,	Massachusetts,	1859
Charles Clarke,	Boston,	Massachusetts,	1859
G. C. Wilson,	Boston,	Massachusetts,	1859
B. O. Wilson,	Boston,	Massachusetts,	1859
John T. Brown,	Boston,	Massachusetts,	1859
Michael H. Gleeson,	Boston,	Massachusetts,	1859
James A. Gleeson,	Boston,	Massachusetts,	1859
Joseph T. Brown,	Boston,	Massachusetts,	1859
Moses D. Colby,	Boston,	Massachusetts,	1859
George Woodbridge,	Boston,	Massachusetts,	1859
Samuel H. Woods,	Boston,	Massachusetts,	1859
Henry Warren,	Boston,	Massachusetts,	1859
John Butterworth,	Boston,	Massachusetts,	1860
Joshua G. Wilbur,	Boston,	Massachusetts,	1860
Elijah Smalley,	Boston,	Massachusetts,	1860
Levi Tower, Jr.,	Boston,	Massachusetts,	1860
Edward H. Fernald,	Boston,	Massachusetts,	1860
Thomas S. Maffitt,	Boston,	Massachusetts,	1861
Laban Beal,	Boston,	Massachusetts,	1861
Benj. Gilpatrick, Jr.,	Boston,	Massachusetts,	1862
George F. H. Markoe,	Boston,	Massachusetts,	1863
Abraham S. Wiley,	Cambridgeport,	Massachusetts,	1857
Henry Thayer,	Cambridgeport,	Massachusetts,	1858
William Gay,	Cambridgeport,	Massachusetts,	1858
A. R. Bailey,	Cambridgeport,	Massachusetts,	1859
A. H. Ramsey,	Cambridgeport,	Massachusetts,	1859
Joel S. Orne,	Cambridgeport,	Massachusetts,	1859
Francis D. Hardy, Jr.,	Cambridgeport,	Massachusetts,	1859

David Scott,	Worcester,	Massachusetts,	1855
Nelson R. Scott,	Worcester,	Massachusetts,	1859
James L. Burbank,	Worcester,	Massachusetts,	1859
M. S. McConville,	Worcester,	Massachusetts,	1859
Anthony S. Jones,	Newburyport,	Massachusetts,	1853
Charles A. Nolcini,	Newburyport,	Massachusetts,	1858
Samuel A. Smith,	Newburyport,	Massachusetts,	1859
John Buck,	Chelsea,	Massachusetts,	1855
Charles E. Field,	Chelsea,	Massachusetts,	1859
John Lynam,	Chelsea,	Massachusetts,	1860
Edw. G. Frothingham, Jr.,	Haverhill,	Massachusetts,	1859
George A. Kimball,	Haverhill,	Massachusetts,	1859
H. M. Whitney,	Lawrence,	Massachusetts,	1860
B. K. Bliss,	Springfield,	Massachusetts,	1859
Edmund Bigelow,	Springfield,	Massachusetts,	1859
Daniel F. White,	Charlestown,	Massachusetts,	1859
Benjamin F. Stacey,	Charlestown,	Massachusetts,	1860
C. C. Bixby,	N. Bridgewater,	Massachusetts,	1859
Warren Tapley,	Lynn,	Massachusetts,	1859
Benjamin Proctor,	Lynn,	Massachusetts,	1859
David Howarth,	Andover,	Massachusetts,	1862
Thomas A. Sweetser,	South Danvers,	Massachusetts,	1859
James Emerton,	Salem,	Massachusetts,	1859
James B. Lane,	Fitchburgh,	Massachusetts,	1853
John B. Arnold,	Fitchburgh,	Massachusetts,	1859
Francis O. Bigelow,	Medford,	Massachusetts,	1859
Samuel Kidder, Jr.,	Lowell,	Massachusetts,	1859
Joseph L. Moffatt,	Roxbury,	Massachusetts,	1859
Charles E. Savelle,	Roxbury,	Massachusetts,	1860
Francis Tinker,	Leominster,	Massachusetts,	1860
F. A. Weber,	Woonsocket,	Massachusetts,	1860
Charles F. Rogers,	Newton,	Massachusetts,	1860
C. M. Whildon,	Pittsfield,	Massachusetts,	1860
Dexter D. Geyer,	Gloucester,	Massachusetts,	1857
William H. Ware,	Gloucester,	Massachusetts,	1859
Eben Blatchford,	Rockport,	Massachusetts,	1857
B. W. Conant,	Woburn,	Massachusetts,	1858
George W. Berrian, Jr.,	North Andover,	Massachusetts,	1857
F. T. Whiting.	Great Barrington,	Massachusetts,	1863
Robert J. Taylor,	Newport,	Rhode Island,	1859
Albert L. Calder,	Providence,	Rhode Island,	1859

Alfred C. Dana,	Providence,	Rhode Island,	1859
Albert J. Congden,	East Greenwich,	Rhode Island,	1860
Henry F. Fish,	Waterbury,	Connecticut,	1852
Nathan Dikeman,	Waterbury,	Connecticut,	1859
James M. B. McNary,	Hartford,	Connecticut,	1859
Thomas Sisson,	Hartford,	Connecticut,	1860
Samuel E. Noyes,	New Haven,	Connecticut,	1859
E. E. Knopp,	Norwalk,	Connecticut,	1860
Nathan F. Peck,	Willimantic,	Connecticut,	1861
Llewellyn S. Haskell,	New York City,	New York,	1852
George D. Coggeshall,	New York City,	New York,	1852
John Meakim,	New York City,	New York,	1852
Eugene Dupuy,	New York City,	New York,	1852
C. B. Guthrie,	New York City,	New York,	1852
Junius Gridley,	New York City,	New York,	1853
James S. Aspinwall,	New York City,	New York,	1855
Benjamin Canavan,	New York City,	New York,	1855
John Canavan,	New York City,	New York,	1855
John Milhau,	New York City,	New York,	1855
John P. Dodge,	New York City,	New York,	1855
F. A. Hegeman,	New York City,	New York,	1855
James T. Maxwell,	New York City,	New York,	1855
Isaac Coddington,	New York City,	New York,	1855
Frederick Hale,	New York City,	New York,	1855
Frederick Thompson,	New York City,	New York,	1856
H. T. Kiersted,	New York City,	New York,	1856
William F. Henry,	New York City,	New York,	1856
John P. Dodge,	New York City,	New York,	1856
J. W. Bowers,	New York City,	New York,	1857
George Syme,	New York City,	New York,	1857
Henry Haviland,	New York City,	New York,	1857
George W. De la Vergne,	New York City,	New York,	1857
John Faber,	New York City,	New York,	1857
Alexander Cushman,	New York City,	New York,	1858
William J. Oliffe,	New York City,	New York,	1858
Thomas T. Green,	New York City,	New York,	1858
Ray B. Easterbrook,	New York City,	New York,	1858
Henry King,	New York City,	New York,	1858
William Egerton,	New York City,	New York,	1858
William M. Somerville,	New York City,	New York,	1858
Henry A. Cassebeer,	New York City,	New York,	1858

Edward L. Milhau,	New York City,	New York,	1858
Lewis T. Lazell,	New York City,	New York,	1858
Edward H. Marsh,	New York City,	New York,	1858
John H. Currie,	New York City,	New York,	1858
Andrew J. Parker,	New York City,	New York,	1858
Samuel N. Stebbins,	New York City,	New York,	1858
Henry R. Haydock,	New York City,	New York,	1858
Lucian F. Wheeler,	New York City,	New York,	1858
John C. Hart,	New York City,	New York,	1858
Robert A. Sands,	New York City,	New York,	1858
William Hegeman,	New York City,	New York,	1858
Frederick V. Rushton,	New York City,	New York,	1858
John D. Dix,	New York City,	New York,	1858
William A. Gellatly,	New York City,	New York,	1858
J. H. Westerfield,	New York City,	New York,	1858
Walton S. Coon,	New York City,	New York,	1858
Henry Kiersted,	New York City,	New York,	1858
Raymond Gravrend,	New York City,	New York,	1859
L. Leroy,	New York City,	New York,	1859
Henry Steele,	New York City,	New York,	1859
William Wright, Jr.,	New York City,	New York,	1859
James H. Anderson,	New York City,	New York,	1859
P. Wendover Bedford,	New York City,	New York,	1859
John W. Sheddon,	New York City,	New York,	1859
W. Neergaard,	New York City,	New York,	1859
F. F. Mayer,	New York City,	New York,	1859
Corydon E. Tyler,	New York City,	New York,	1859
Alexander V. Blake,	New York City,	New York,	1860
J. Weaver,	New York City,	New York,	1860
Samuel J. Billings,	New York City,	New York,	1860
William J. Watson,	New York City,	New York,	1860
William M. Giles,	New York City,	New York,	1860
John Carle, Jr.,	New York City,	New York,	1860
Jesse M. Sands,	New York City,	New York,	1860
Jabez H. Hazard,	New York City,	New York,	1860
Jesse Weaver,	New York City,	New York,	1860
George W. Southwick,	New York City,	New York,	1860
E. L. Johnson,	New York City,	New York,	1860
William J. Darbey,	New York City,	New York,	1860
Theodore Schumann,	New York City,	New York,	1860
Otto Laist,	New York City,	New York,	1860

George G. Porter,	New York City,	New York,	1860
George E. Sheils,	New York City,	New York,	1860
Warren B. Gardiner,	New York City,	New York,	1860
Gustav Ramsperger,	New York City,	New York,	1860
Augustine Presinger,	New York City,	New York,	1860
George S. Peduzzi,	New York City,	New York,	1861
B. H. Reinold,	New York City,	New York,	1861
Adolph G. Dunn,	New York City,	New York,	1862
James S. Higgins,	New York City,	New York,	1862
Theobald Frohwein,	New York City,	New York,	1862
W. Fisher,	New York City,	New York,	1862
A. W. Gabaudan,	New York City,	New York,	1862
Daniel C. Robbins,	New York City,	New York,	1862
Alexander H. Everett,	New York City,	New York,	1863
Tristram W. Metcalf,	Brooklyn,	New York,	1857
Alexander Hudnut,	Brooklyn,	New York,	1857
John M. Maisch,	Brooklyn,	New York,	1857
Thomas Whitehorn,	Brooklyn,	New York,	1858
Edward R. Squibb,	Brooklyn,	New York,	1858
Robert J. Davies,	Brooklyn,	New York,	1858
George F. Ayling,	Brooklyn,	New York,	1858
George C. Close,	Brooklyn,	New York,	1858
J. Lindley Pyle,	Brooklyn,	New York,	1859
Cyrus Pyle,	Brooklyn,	New York,	1859
Luther Atwood,	Brooklyn,	New York,	1859
William H. Page,	Brooklyn,	New York,	1860
Thomas Kingshorn,	Brooklyn,	New York,	1860
Peter D. Leys,	Brooklyn,	New York,	1860
L. S. Hubbard,	Brooklyn,	New York,	1860
Richard Forester,	Brooklyn,	New York,	1860
George C. Leys,	Brooklyn.	New York,	1860
W. E. P. Baylis,	Brooklyn,	New York,	1860
Richard J. Owens,	Brooklyn,	New York,	1860
John McDonald,	Brooklyn,	New York,	1860
Paul Balluff,	Brooklyn,	New York,	1860
Victor Heidenreich,	Brooklyn,	New York,	1860
Francis M. Bassett,	Brooklyn,	New York,	1861
John A. Niebrugge,	Brooklyn,	New York,	1861
S. F. Conway,	Brooklyn,	New York,	1862
R. S. McMurdy,	Albany,	New York,	1861
William H. MacRea,	Factoryville,	New York,	1861

S. G. Welling,	New Rochelle,	New York,	1860
William E. Hagan,	Troy,	New York,	1860
William G. Stephens,	Yonkers,	New York,	1860
Theodore Moith,	Fishkill Landing,	New York,	1860
H. A. Tilden,	New Lebanon,	New York,	1858
A. I. Mathews,	Buffalo,	New York,	1855
William H. Peabody,	Buffalo,	New York,	1857
H. A. Blauw,	Rochester,	New York,	1856
Alfred S. Lane,	Rochester,	New York,	1857
James T. King,	Middleton,	New York,	1859
George B. Fish,	Saratoga Springs,	New York,	1860
James Stratton,	Bordentown,	New Jersey,	1859
William Thomas,	Jersey City,	New Jersey,	1855
Alfred J. Shipley,	Jersey City,	New Jersey,	1859
Peter V. Coppuck,	Mount Holly,	New Jersey,	1857
A. S. White,	Mount Holly,	New Jersey,	1860
C. H. Dalrymple,	Morristown,	New Jersey,	1860
William Ball,	Elizabeth City,	New Jersey,	1860
Wm. J. Allison,	Burlington,	New Jersey,	1862
Charles Ellis,	Philadelphia,	Pennsylvania,	1852
William Procter, Jr.,	Philadelphia,	Pennsylvania,	1852
Alfred B. Taylor,	Philadelphia,	Pennsylvania,	1852
Edward Parrish,	Philadelphia,	Pennsylvania,	1852
Peter J. Hassard,	Philadelphia,	Pennsylvania,	1853
Samuel S. Garrigues,	Philadelphia,	Pennsylvania,	1855
Henry C. Blair,	Philadelphia,	Pennsylvania.	1855
John H. Ecky,	Philadelphia,	Pennsylvania,	1856
Frederick L. John,	Philadelphia,	Pennsylvania,	1856
Thomas Weaver,	Philadelphia,	Pennsylvania,	1856
Dillwyn Parrish,	Philadelphia,	Pennsylvania,	1857
Samuel F. Troth,	Philadelphia,	Pennsylvania,	1857
Ambrose Smith,	Philadelphia,	Pennsylvania,	1857
Thomas P. James,	Philadelphia,	Pennsylvania,	1857
Charles Bullock,	Philadelphia,	Pennsylvania,	1857
Thomas S. Wiegand,	Philadelphia,	Pennsylvania,	1857
Samuel N. James,	Philadelphia,	Pennsylvania,	1857
Evan T. Ellis,	Philadelphia,	Pennsylvania,	1857
Louis M. Emanuel,	Philadelphia,	Pennsylvania,	1857
Wilson H. Pile,	Philadelphia,	Pennsylvania,	1857
Samuel S. Bunting,	Philadelphia,	Pennsylvania,	1857
T. Morris Perot,	Philadelphia,	Pennsylvania,	1857

Asher S. Leidy,	Philadelphia,	Pennsylvania,	1857
William H. Pratt,	Philadelphia,	Pennsylvania,	1857
Edward Donnelly,	Philadelphia,	Pennsylvania,	1857
Henry Steiner,	Philadelphia,	Pennsylvania,	1857
Hennell Stevens,	Philadelphia,	Pennsylvania,	1857
Samuel Chapman,	Philadelphia,	Pennsylvania,	1857
Edward H. Hance,	Philadelphia,	Pennsylvania,	1857
Charles H. Eggert,	Philadelphia,	Pennsylvania,	1857
George M. Snowden,	Philadelphia,	Pennsylvania,	1857
George Cook,	Philadelphia,	Pennsylvania,	1857
William R. Warner,	Philadelphia,	Pennsylvania,	1857
O. S. Hubbell,	Philadelphia,	Pennsylvania,	1857
Henry N. Rittenhouse,	Philadelphia,	Pennsylvania,	1857
M. H. Kollock,	Philadelphia,	Pennsylvania,	1857
J. Lindsey O'Neal,	Philadelphia,	Pennsylvania,	1858
William J. Jenks,	Philadelphia,	Pennsylvania,	1858
E. Raphael Perot,	Philadelphia,	Pennsylvania,	1858
W. B. Thompson,	Philadelphia,	Pennsylvania,	1858
Thomas A. Lancaster,	Philadelphia,	Pennsylvania,	1859
Adolphus F. Neynaber,	Philadelphia,	Pennsylvania,	1859
Adam H. Wilson,	Philadelphia,	Pennsylvania,	1859
Benjamin F. Johnson,	Philadelphia,	Pennsylvania,	1859
J. A. Heintzelman,	Philadelphia,	Pennsylvania,	1858
Daniel S. Jones,	Philadelphia,	Pennsylvania,	1859
James T. Shinn,	Philadelphia,	Pennsylvania,	1860
George J. Scattergood,	Philadelphia,	Pennsylvania,	1860
Charles Shivers,	Philadelphia,	Pennsylvania,	1860
William Evans, Jr.,	Philadelphia,	Pennsylvania,	1860
Benjamin J. Crew,	Philadelphia,	Pennsylvania,	1860
J. Lewis Crew,	Philadelphia,	Pennsylvania,	1860
Henry Bower,	Philadelphia,	Pennsylvania,	1860
Thomas R. Coombe,	Philadelphia,	Pennsylvania,	1860
Abram Albergur, Jr.,	Philadelphia,	Pennsylvania,	1860
Edward R. Fell,	Philadelphia,	Pennsylvania,	1862
Frederick A. Keffer,	Philadelphia,	Pennsylvania,	1862
Frederick Rollman,	Philadelphia,	Pennsylvania,	1862
George Y. Shoemaker,	Philadelphia,	Pennsylvania,	1862
John C. Savery,	Philadelphia,	Pennsylvania,	1862
C. Lewis Diehl,	Philadelphia,	Pennsylvania,	1863
John C. Everson,	Philadelphia,	Pennsylvania,	1863
Talbot C. Murray,	Philadelphia,	Pennsylvania,	1863

Henry W. Scheffer,	Philadelphia,	Pennsylvania,	1863
George M. Smyser,	Philadelphia,	Pennsylvania,	1863
Henry J. Weber,	Philadelphia,	Pennsylvania,	1863
George W. Mowbray,	Titusville,	Pennsylvania,	1860
Charles A. Bannvart,	Harrisburg,	Pennsylvania,	1856
William Heyser, Jr.,	Chambersburg,	Pennsylvania,	1856
Charles A. Heinitsch,	Lancaster,	Pennsylvania,	1857
Leander Neal,	Lancaster,	Pennsylvania,	1858
John C. Lang,	Lancaster,	Pennsylvania,	1863
William H. Squire,	Germantown,	Pennsylvania,	1862
M. M. Selfridge,	Bethlehem,	Pennsylvania,	1858
Joseph L. Lemberger,	Lebanon,	Pennsylvania,	1859
E. T. Miller,	York,	Pennsylvania,	1858
J. B. Moore,	Danville,	Pennsylvania,	1860
Washington Laycock,	Danville,	Pennsylvania,	1857
J. A. Wolf,	Wrightsville,	Pennsylvania,	1860
Samuel K. Norgrave,	Pittsburg,	Pennsylvania,	1857
Geo. W. Weyman,	Pittsburg,	Pennsylvania,	1858
Charles H. Super,	Pittsburg,	Pennsylvania,	1858
Harmar D. Scully,	Pittsburg,	Pennsylvania,	1858
James E. Cunningham,	Pittsburg,	Pennsylvania,	1860
H. M. Pettit,	Pittsburg,	Pennsylvania,	1860
John D. Mattern,	Pittsburg,	Pennsylvania,	1860
Jacob T. Haehnlen, Jr.,	Pittsburg,	Pennsylvania,	1860
Richard Tener, Jr.,	Pittsburg,	Pennsylvania,	1863
J. C. Hughes,	Pottsville,	Pennsylvania,	1862
A. W. Newton,	Bristol,	Pennsylvania,	1862
Henry W. Lesley,	Bristol,	Pennsylvania,	1862
W. M. Guilford,	Lebanon,	Pennsylvania,	1857
W. L. McCorkle,	Columbia,	Pennsylvania,	1857
A. H. Grimshaw,	Wilmington,	Delaware,	1858
John P. Toner,	Wilmington,	Delaware,	1859
Ferris Bringhurst,	Wilmington,	Delaware,	1862
A. P. Sharp,	Baltimore,	Maryland,	1855
David Stewart,	Baltimore,	Maryland,	1855
George W. Andrews,	Baltimore,	Maryland,	1856
James M. Bowers,	Baltimore,	Maryland,	1856
L. Phillips,	Baltimore,	Maryland,	1856
J. Jacob Smith,	Baltimore,	Maryland,	1856
Charles Caspari,	Baltimore,	Maryland,	1856
John W. Barry,	Baltimore,	Maryland,	1856

J. H. Lemmon,	Baltimore,	Maryland,	1856
Joseph Roberts,	Baltimore,	Maryland,	1856
E. J. Russell,	Baltimore,	Maryland,	1856
J. Faris Moore,	Baltimore,	Maryland,	1856
Edward C. Gilpin,	Baltimore,	Maryland,	1856
Oscar Monsarrat,	Baltimore,	Maryland,	1856
G. Davidge Wood,	Baltimore,	Maryland,	1856
J. B. Baxley,	Baltimore,	Maryland,	1856
Samuel McPherson,	Baltimore,	Maryland,	1856
James Balmer,	Baltimore,	Maryland,	1856
William S. Thompson,	Baltimore,	Maryland,	1856
William Caspari,	Baltimore,	Maryland,	1856
T. W. Tomlinson,	Baltimore,	Maryland,	1856
Thomas H. Hilsby,	Baltimore,	Maryland,	1856
J. J. Thomsen,	Baltimore,	Maryland,	1856
James M. Bowers,	Baltimore,	Maryland,	1856
R. H. Dryden,	Baltimore,	Maryland,	1857
George J. Fetter,	Baltimore,	Maryland,	1857
N. H. Jennings.	Baltimore,	Maryland,	1857
C. Wiseman,	Baltimore,	Maryland,	1857
E. Kloman,	Baltimore,	Maryland,	1858
A. Vogeler,	Baltimore,	Maryland,	1858
Lewis Dohme,	Baltimore,	Maryland,	1859
H. A. Elliott,	Baltimore,	Maryland,	1859
John Block,	Baltimore,	Maryland,	1860
John Benzinger,	Baltimore,	Maryland,	1860
James E. McDaniel,	Baltimore,	Maryland,	1860
John H. Brown,	Baltimore,	Maryland,	1863
Alexander E. Brown,	Baltimore,	Maryland,	1863
Charles E. Dohme,	Baltimore,	Maryland,	1863
Gustavus Dohme,	Baltimore,	Maryland,	1863
S. Ellwood Morrison,	Baltimore,	Maryland,	1863
Joseph C. O'Brien,	Baltimore,	Maryland,	1863
John G. Nagle,	Baltimore,	Maryland,	1863
Elisha H. Perkins,	Baltimore,	Maryland,	1863
Valentine Harbaugh,	Washington,	Dist. Columbia,	1856
H. H. McPherson,	Washington,	Dist. Columbia,	1856
Joseph Walsh,	Washington,	Dist. Columbia,	1856
F. S. Walsh,	Washington,	Dist. Columbia,	1856
John L. Kidwell,	Georgetown,	Dist. Columbia,	1856

D. S. Dyson,	Washington,	Dist. Columbia,	1857
Samuel. F. Tyson,	Washington,	Dist. Columbia,	1857
Daniel B. Clarke,	Washington,	Dist. Columbia,	1857
Edward Shoemaker,	Washington,	Dist. Columbia,	1858
Joseph W. Nairn,	Washington,	Dist. Columbia,	1858
T. C. McIntire,	Washington,	Dist. Columbia,	1858
R. A. Payne,	Washington,	Dist. Columbia,	1858
S. R. Sylvester,	Washington,	Dist. Columbia,	1858
John L. Love,	Washington,	Dist. Columbia,	1858
Joseph B. Moore,	Washington,	Dist. Columbia,	1858
Cornelius Boyle,	Washington,	Dist. Columbia,	1858
James N. Callan,	Washington,	Dist. Columbia,	1857
S. B. Waite,	Washington,	Dist. Columbia,	1858
Lewis M. Smith,	Washington,	Dist. Columbia,	1858
Albert G. Palmer,	Washington,	Dist. Columbia,	1858
Francis L. Gaither,	Washington,	Dist. Columbia,	1860
Giles G. C. Simms,	Washington,	Dist. Columbia,	1860
Francis X. Dooley,	Washington,	Dist. Columbia,	1863
R. H. Stabler,	Alexandria,	Virginia,	1856
J. W. Bowling,	Alexandria,	Virginia,	1857
John A. Milburn,	Alexandria,	Virginia,	1858
Joseph Laidley,	Richmond,	Virginia,	1852
S. M. Zachrisson,	Richmond,	Virginia,	1854
Alexander Duval,	Richmond,	Virginia,	1855
T. Roberts Baker,	Richmond,	Virginia,	1856
James Cooke,	Fredericksburg,	Virginia,	1856
Fayette W. Johnson,	Fredericksburg,	Virginia,	1858
Silas Whitehead,	Fredericksburg,	Virginia,	1856
J. Hartley Bunn,	Lynchburg,	Virginia,	1859
William Loeffler,	Chambersburg,	Virginia,	1857
F. M. Wells,	Charlotte,	Virginia,	1857
Charles K. Gallagher,	Washington,	North Carolina,	1857
Richard B. Saunders,	Chapel Hill,	North Carolina,	1858
John Thomson,	Sumpter,	South Carolina,	1858
H. J. Macdonald,	Barnwell C. H.	South Carolina,	1858
R. H. Land,	Newberry C. H.	South Carolina,	1859
Lewis T. Sillyman,	Columbia,	South Carolina,	1859
A. A. Solomons,	Savannah,	Georgia,	1858
W. W. Solomons,	Savannah,	Georgia,	1858
Robert Battey,	Rome,	Georgia,	1856
W. H. Warner,	Rome,	Georgia,	1859

J. B. W. Nowlin,	Rome,	Georgia,	1859
John M. Clark,	Milledgeville,	Georgia'	1857
Fleming G. Grieve,	Milledgeville,	Georgia,	1859
John S. Pemberton,	Columbus,	Georgia,	1857
J. A. Taylor,	Atlanta,	Georgia,	1859
W. A. Lansdell,	Atlanta,	Georgia,	1859
Robert J. Massey,	Atlanta,	Georgia,	1859
B. M. Smith,	Atlanta,	Georgia,	1859
J. Henry Zeilin,	Macon,	Georgia,	1859
O. F. Cawthon,	Mobile,	Alabama,	1860
Fairman S. Taber,	Huntsville,	Alabama,	1861
F. Glackmeyer,	Montgomery,	Alabama,	1857
P. C. Candidus,	Aberdeen,	Mississippi,	1857
Crawford Blackwood,	Columbus,	Mississippi,	1857
Matthew F. Ash,	Jackson,	Mississippi,	1856
William Pryor Creecy,	Vicksburg,	Mississippi,	1860
Charles C. Thornton,	Sharon,	Mississippi,	1861
A. E. Richards,	Plaquemine,	Louisiana,	1855
James A. Lee,	New Iberia,	Louisiana,	1856
William Longshaw, Jr.,	Bayou Sara,	Louisiana,	1858
John Beynon,	Shrevesport,	Louisiana,	1858
John H. Pope,	New Orleans,	Louisiana,	1860
William B. Chapman,	Cincinnati,	Ohio,	1852
William S. Merrill,	Cincinnati,	Ohio,	1854
A. M. Stevens,	Cincinnati,	Ohio,	1854
W. J. M. Gordon,	Cincinnati,	Ohio,	1854
Lewis Rehfuss,	Cincinnati,	Ohio,	1854
J. V. Whetstone,	Cincinnati,	Ohio,	1854
J. W. Hannaford,	Cincinnati,	Ohio,	1854
William H. Adderly,	Cincinnati,	Ohio,	1854
W. H. Coolidge,	Cincinnati,	Ohio,	1855
Asbury Kent,	Cincinnati,	Ohio,	1855
Theodore Marsh,	Cincinnati,	Ohio,	1855
Charles A. Smith,	Cincinnati,	Ohio,	1855
William R. Smith,	Cincinnati,	Ohio,	1855
John Scott,	Cincinnati,	Ohio,	1855
J. C. Parr,	Cincinnati,	Ohio,	1856
William C. Arons,	Cincinnati,	Ohio,	1856
Paul Reinlein,	Cincinnati,	Ohio,	1856
Oliver F. Gordon,	Cincinnati,	Ohio,	1857

E. S. Wayne,	Cincinnati,	Ohio,	1857
Charles A. Junghanns,	Cincinnati,	Ohio,	1858
George A. Sheusler,	Cincinnati,	Ohio,	1858
W. F. Clency,	Cincinnati,	Ohio,	1859
Andrew J. Tully,	Cincinnati,	Ohio,	1862
John C. Gerhard,	Cincinnati,	Ohio,	1862
J. W. Deitrich,	Dayton,	Ohio,	1856
William Fiske,	Cleveland,	Ohio,	1857
E. W. Sackrider,	Cleveland,	Ohio,	1859
J. F. Grossklans,	Navarre,	Ohio,	1859
Hamilton Creighton,	Zenia,	Ohio,	1855
J. H. Larwill, Jr.,	Columbia,	Tennessee,	1858
Frederick Stearns,	Detroit,	Michigan,	1855
T. R. Spence,	Detroit,	Michigan,	1857
Otto Leusner,	Detroit,	Michigan,	1857
Lewis E. Higby,	Detroit,	Michigan,	1858
Samuel P. Duffield,	Detroit,	Michigan,	1859
George M. Wheeler,	Detroit,	Michigan,	1860
William Johnston,	Detroit,	Michigan,	1860
Robert F. Lattimer,	Jackson,	Michigan,	1857
John T. Fuller,	Ann Arbor,	Michigan,	1857
Uriah B. Wilson,	Ann Arbor,	Michigan,	1859
Robert C. Wardell,	Battle Creek,	Michigan,	1860
George P. Glazier,	Adrian,	Michigan,	1863
Thomas H. Barr,	Terre Haute,	Indiana,	1853
John A. Child,	Madison,	Indiana,	1856
B. F. Scribner,	New Albany,	Indiana,	1858
George W. Sloan,	Indianapolis,	Indiana,	1857
Charles Pefferman,	Peru,	Indiana,	1859
C. F. G. Meyer,	Fort Wayne,	Indiana,	1860
W. J. Luck,	Vincennes,	Indiana,	1859
Edwin O. Gale,	Chicago,	Illinois,	1857
William H. Gale,	Chicago,	Illinois,	1857
James D. Paine,	Chicago,	Illinois,	1857
M. M. DeLevis,	Chicago,	Illinois,	1859
George Buck,	Chicago,	Illinois,	1860
Wm. F. Blocki,	Chicago,	Illinois,	1863
E. H. Price, M. D.,	Tamaroa,	Illinois,	1863
Robert Thompson,	Bloomington,	Illinois,	1860
George Blinkhorn,	Rock Island,	Illinois,	1860
Edwin R. Smith,	Monmouth,	Illinois,	1862

Eugene L. Massot,	St. Louis,	Missouri,	1857
James O'Gallagher,	St. Louis,	Missouri,	1858
J. Chadwick Moody,	St. Louis,	Missouri,	1858
Alexander Leitch,	St. Louis,	Missouri,	1858
Enno Sander,	St. Louis,	Missouri,	1858
W. H. Dornin,	St. Louis,	Missouri,	1858
Isaac E. Jones,	St. Louis,	Missouri,	1858
Samuel D. Hendel,	St. Louis,	Missouri,	1858
G. T. Chamberlain,	St. Louis,	Missouri,	1857
George M. Washburn,	St. Louis,	Missouri,	1859
Arthur Leitch,	St. Louis,	Missouri,	1860
H. A. Hughes,	Louisville,	Kentucky,	1857
J. T. Barnett,	Danville,	Kentucky,	1859
John Jackson,	Knoxville,	Tennessee,	1857
Samuel W. Osgood,	Davenport,	Iowa,	1858
C. F. G. Collins,	Beloit,	Wisconsin,	1859
John R. Drake,	Milwaukie,	Wisconsin,	1860
Henry C. Morris,	St. Paul,	Minnesota,	1859
W. Sherman Potts,	St. Paul,	Minnesota,	1859
Charles L. Bache,	San Francisco,	California,	1852
William B. Little,	San Francisco,	California,	1857
Louis D. Lanzwiert,	San Francisco,	California,	1859
Charles Hodge,	San Francisco,	California,	1859
George S. Dickey,	San Francisco,	California,	1859
George E. Hinckly,	San Francisco,	California,	1859
Charles E. Hinckly,	San Francisco.	California,	1859
William H. Keith,	San Francisco,	California,	1859
James G. Steele,	San Francisco,	California,	1859
Robert Hall,	San Francisco,	California,	1859
James H. Widdber,	San Francisco,	California,	1859
William H Brigham,	San Francisco,	California,	1859
Charles P. Pollard,	Marysville,	California,	1859
Robert J. Brown,	Leavenworth,	Kansas,	1862
George C. Hunt, Jr.,	Frederickton,	N.Brunsw'k,N.S.,	1859
William Saunders,	London,	Canada West,	1860
George J. Waugh,	Hamilton,	Canada West,	1862
N. Cressman,	Waterloo,	Canada West,	1863
James B. Heyl,	Hamilton,	Bermuda,	1863

INDEX.

Abietinic acid . 140
Absorption of poisons 154
Acacia Catechu 82
Acetate of ethyl 136
    sanguinaria 214
Acetic acid 136, 167
    glacial 136
  ether 136
Acid abietinic 140
  acetic 136, 167
    glacial 136
  aconitic 139
  acrylic 138
  anchoic 138
  apelaïc 138
  arsenious 125
  azelaic 138
  benzoic 141
  bismuthic 126
  boracic 160
  butyric 136
  caïncic 146
  camphoric 139
  capronic 137
  carbolic 135
  carbonic 101, 159
  chromic 125, 164
  chrysophanic 140
  cinnamic 141
  eugenic 143
  formic 136
  fumaric 138
  guaiacic 142
  hippuric 141
  hydrochloric 101, 115
  hydrocyanic 128
  hypobromous 116

Acid kinic 140
  kresotic 141
  lactucic 143
  larixinic 140
  lepargylic 138
  maleïnic 138
  malic 138
  manganous 122
  molybdic 125
  nitric 158
    diluted 101
  nitromuriatic 115
  œnanthic 137
  oxalic 137
  permanganic 122
  phosphoric 101, 114, 161
  picric 141
  piperic 140
  propionic 136
  salicylic 141
  succinic 137
  sulphuric 113
  sulphurous 113
  tannic 167
  tartaric 138
  xanthic 137
Acids 61, 168
Acidum carbonicum 101
  hydrochloricum 101
  nitricum dilutum 101
  phosphoricum 101
Aconite root 176
    comparison between American and European 196
Aconitum 71
Acrylic acid 138
Address of President Moore on assuming the chair 32
Adjournment of the Association 48
Æsculus hippocastanum 78
Æsthetical Pharmacy, essay on 42, 266
Æther 187
Æther fortior 188
Agaricus bulbosus 97
  muscarius 97
Agricultural chemistry 153
Ailanthus glandulosa 81
Albizzia anthelmintica 83
Albumen 156
Alcohol 177

Alcohol amylic 134
    benzylic 135
    ethylic 133
    from beet-roots 167
    methylic 133
    œnanthylic 134
    phenylic 135
    propylic 134
Alcoholic fluid extracts 226
Alcoholometry 166
Algaceæ 98
Alkalies 161
Alkaloids 167
    in oil 63
    and their combinations 148
Alloxan 169
Aloe socotrina 95
    Zanzibar 96
Aloes 178
Aloës glycerolatum 63
Alstonia constricta 93
Alumina 163
    sulphate of 122
Aluminates 121
Aluminium 121
American and European aconite root compared 196
    sulphuric acid, arsenic in 255
Ammonia 163
    and sulphur 120
    bicarbonate of 119
    liquid 119
    salts of 120
Ammoniacal fumes 120
Ammoniacum, source of 75
Ammoniochlorides of mercury 127
Ammonium, chloride of 119
    derivations 148
    iodide of 119
    sulphocyanide of 129
Amygdalus communis 82
Amylic alcohol 134
Anacardiaceæ 84
Analytical Chemistry 157
Anchoic acid 138
Anilin derivatives 148
Anilina 155
Animal and Physiological Chemistry 169
Animal drugs 98

Annual report of the President 26
Answers to queries 36
Anthracene 131
Antimonii iodidum 103
  oxyiodidum 103
Antimonium 102
Antimony, manufacture of 126
Apelaïc acid 138
Apium petroselinum 76
Apocynaceæ 92
Apparatus and general observations 59
Application for membership, form of 281
Aqua amygdalarum amar 62
  oxygenata 101
Aquæ minerales 63, 100
Arachnida 100
Araliaceæ 76
Areca catechu 95
Argemone mexicana 75
Arnica montana 89
Aromatic radicals 130
Arseniate of soda 126
  strychnia 151
    and morphia 151
Arsenic 164
  in bismuth 126
    sulphuric acid 255
Arsenious acid 125
Arsenite of strychnia 151
Artemisia absinthium 89
Artocarpus incisa 84
Arum dranunculus 96
Asclepiadaceæ 93
Asparagin 146
Aspidium filix mas 96
Aspirator 59
Assafœtida, source of 75
Atropa belladonna 92
Atropia 151
  paper 70
  sulphate of 152
Azelaïc acid 138

Bacobotrys picta 90
Balsamaceæ 85
Barium 120
Baryta, caustic 120
Basic sulphate of magnesia 121

Bedford, P. W., essay on buchu leaves ... 211
Belladonna ... 179
Benzoic acid ... 141
Benzylic alcohol ... 135
Berberidaceæ ... 72
Berberina ... 152
Bicarbonate of ammonia ... 119
  potassa ... 117
  soda ... 118
Bichromate of potassa ... 102
Bile ... 170
Bilifulvin ... 172
Bismuth, arsenic in ... 126
  subnitrate of ... 103
  ternitrate of ... 126
Bismuthic acid ... 126
Blatta Americana ... 100
Blood ... 171
Books in English ... 52
  French ... 57
  German ... 53
Boracic acid ... 160
Borax lime ... 102
Boro-natro calcite ... 102
Brayera anthelmintica ... 82
Bringhurst, F., on oxides of iron used in medicine ... 253
Brominium ... 101
Bromoform ... 133
Brucia ... 151
Bryonia alba ... 76
Buchu leaves, comparative values of varieties of ... 211
Business committee appointed ... 41
Butea frondosa ... 84
Butyric acid ... 136

Cadmium ... 123
Caesium ... 118
Caffeïna ... 150
Caïncin ... 146
Calcis carbonas ... 103, 121
Calcis et ferri phosphas ... 103
Calcium, iodide of ... 120
Calotrophis gigantea ... 93
Calotrophis Hamiltonii ... 93
Calx chlorinata ... 102
Camphene ... 131
Camphenes ... 131
Camphor ... 179

Canella alba........ 77
Canelleæ........ 77
Cannabis Indica........ 85
Caoutchouc and gutta-percha........ 130
Capronic acid........ 137
Caramel........ 144
Carbohydrates........ 143
Carbohydrides, synthesis of........ 130
Carbolic acid........ 135
Carbon........ 160
Carbonate of lime........ 103, 121
  potassa........ 116
Carbonic acid........ 101, 159
Cardamom........ 180
Cardamoms........ 94
Carduus benedictus........ 89
Cassuvium pomiferum........ 84
Castile soap........ 183
Caulophyllum inophyllum........ 77
  thalictroides........ 72
Caustic baryta........ 120
  soda........ 117
Cedrelaceæ........ 78
Cedrela febrifuga........ 78
Celastraceæ........ 80
Cephaëlis ipecacuanha........ 87
Cerata, unguenta, &c........ 68
Cerates........ 61
Ceratum simplex........ 68
Certificate of membership granted to W. L. Laycock........ 40
Chelidonium majus........ 75
Chenopodiaceæ........ 86
Chenopodium vulvaria........ 86
Chicago College of Pharmacy........ 174
Chinoline........ 168
Chrococca densifolia........ 87
Chlorate of potassa........ 102, 115
Chloride of ammonium........ 119
  silver........ 127
Chlorides, precipitation of........ 115
Chlorine........ 114, 161
Chloroform........ 133, 189
Chloroformi glycerolatum........ 63
  mistura........ 70
Chlorophyll........ 146
Cholesterin........ 146
Cholina........ 170
Chromates, composition of........ 125

Chromic acid 125, 164
Chrysophanic acid 86, 140
Cigarettes, medicated 69
Cinchona 88, 180
  calisaya 89
  succirubra 89
Cinchonia 150
  sulphate of 183
Cincinnati chosen for place of next meeting 36
  College of Pharmacy 174
Cinnamic acid 141
Cinnamodendron corticosum 77
Close, George C., essay on conium maculatum 200
Cladophora glomerata 98
Clupea harengus 100
Coal-gas 129
Coca 81
Cocaïna 81
Codliver oil 99
  jelly 70
Colchicum root 180
  seed 180
Collodion 63
Collodium ferratum 63
Coloring matters 146
Colors of flowers and leaves 155
Committee on certificate of membership, appointed 41
  credentials, appointed 19
  Drug Market, appointed 40
  election of members 41
  nominations appointed 26
  Pharmacopœia appointed 43
  sale of poisons discontinued 35
  scientific queries appointed 40
  to audit Treasurer's Report 34, 35
  to report on specimens exhibited 36, 42
Comocladia dentata 84
Comparative advantages of leaves and seeds of conium maculatum 200
  values of varieties of buchu leaves 211
Compositæ 89
Compound spirit of ether 190
Confectio aromatica 69
Conia 149
Coniferæ 94
Conium, comparison between leaves and seeds of 200
Conium maculatum 76
Constitution of impure oxides of iron used in medicine 253

Constitution of the American Pharmaceutical Association........................ 275
Convolvulaceæ.. 87
Copaifera... 83
Contamination of American sulphuric acid with arsenic......................... 255
Copper amalgam.. 127
    in plants.. 154
        powder.. 123
    oxalate of.. 137
Coptis teela.. 71
    trifolia... 71
Cordia boissieri.. 90
Cordiaceæ.. 90
Coriariaceæ... 81
Coriaria ruscifolia.. 81
Coridina... 149
Cornaceæ... 76
Cornus mascula... 76
Corresponding Secretary authorized to procure foreign Periodicals......... 36
Cortex winteranus.. 72
Crocus sativus.. 95
Croton cascarilla... 79
    eluteria.. 78
    lineare... 79
    lucidum.. 79
    Sloanei... 79
Cruciferæ... 77
Cubeba officinalis.. 85
Cucurbitaceæ... 76
Cupric chloride... 124
    oxide.. 123
Cupuliferæ... 84
Curcuma longa.. 94
Cyanide of zinc... 129
Cyanogen.. 166
Cytisus laburnum... 83

Daphne mezereum... 86
Datura stramonium... 91
Decomposition of vapors at high temperatures................................. 119
Dialysis.. 169
Dicentia formosa.. 75
Digester.. 59
Digitalina.. 150
Digitalis purpurea... 91
Dissociation... 119
Dorema ammoniacum.. 75
Dorstenia contrayerva.. 85
Drying of troches... 69

Elementary and inorganic substances ... 100
  substances, report on ... 61
Elixir cinchonæ ferrophosphoricum ... 64
Elixir pepsini comp ... 64
Elletaria cardamomum ... 94
Emetina ... 152
Emplastra ... 67
Emplastrum adhesivum ... 67
  calaminaris ... 67
  cantharidum perpetuum ... 67
  gelatinæ ... 68
  plumbi carbonatis ... 67
  stibiatum ... 67
English books ... 52
Ephedra equisetina ... 94
Ergot ... 97
Ericaceæ ... 87
Erythræa centaurium ... 92
Erythrite ... 145
Erythroxylaceæ ... 80
Erythroxylon coca ... 80
Essentiæ ... 64
Ether ... 134
Ether displacer ... 59
Ethylenic oxide ... 134
Ethylenic sulphides ... 134
Ethylic alcohol ... 133
Ethylic oxide ... 134
Ethyl mercaptan ... 134
Eugenic acid ... 143
Enonymite ... 80
Enonymus atropurpureus ... 80
  Europœus ... 80
Euphorbiaceæ ... 78
External remedies, Report on ... 61
Extracta ... 65
  fluida ... 64, 222
Extraction of potassa from marl ... 256
Extract of malt ... 69
Extracts ... 66
Extracts, report on ... 61
Extractum absinthii fluidum ... 233
  achilleæ " ... 233
  aconiti folii fluidum ... 229, 246
    radicis " ... 226
  aloës fluidum ... 240
  angusturæ fluidum ... 230
  anthemidis " ... 233

Extractum arnicæ fluidum 229
assafœtidæ " 245
aurantii corticis " 233
belladonnæ 65
fluidum 229, 246
buchu " 227
calami " 229
calumbæ " 231
canellæ " 227
capsici " 227, 246
cardamomi " 227
caryophylli " 227, 246
cascarillæ " 65, 229
catechu " 241
chenopodii " 227, 233
chimaphilæ " 237, 246
chirettæ " 231
cimicifugæ " 227, 232, 247
cinchonæ " 238, 247
" aromaticum 65
cocci " 65, 242
cocculi " 65, 245
colchici radicis fluidum 229, 247
seminis " 229
colocynthidis " 229
conii " 234, 247
cubebæ " 227, 247
cypripedii " 227
digitalis " 234, 247
dulcamaræ " 236, 247
epigeæ " 237
ergotæ " 234, 247
erigerontis " 233
eupatorii " 231
fuci vesiculosi 66
gallæ fluidum 236
gentianæ " 231
geranii " 236, 247
glycyrrhizæ fluidum 242
granati fructus corticis fluidum 236
radius " " 237, 247
helianthemi fluidum 236
hellebori " 229
humuli " 231
hydrastis " 231
hyoscyami " 230, 247
inulæ " 227
ipecacuanhæ " 235, 247

Extractum iridis fluidum 227
jalapæ " 227, 247
juglandis fluidum 238
juniperi " 233
kino " 241
krameriæ " 241, 247
lappæ " 231
leptandræ " 65, 238
lobeliæ " 235
lupulinæ " 227
marrubii " 233
matico " 230, 247
myrrhæ " 227
nucis vomicæ " 228
opii " 243
papaveris " 231
pareiræ " 231
phytolaccæ " 231
pimentæ " 228
podophylli " 228, 247
prinos " 231
pruni virginianæ fluidum 243
pyrethri " 228
quassiæ " 231
quercûs " 236
rhei " 239
rhus " 238
rosæ " 65
gallicæ " 231
rosmarini " 233
rubiæ " 236
rubi " 237, 248
sabadillæ " 228
sabinæ " 233
salicis " 231
salviæ " 233
sanguinariæ " 235
sarsaparillæ " 237, 248
scillæ " 230, 228
scoparii " 230
scutellariæ " 232
senecio " 238
senegæ " 230
sennæ " 239, 248
serpentariæ " 232, 248
spigeliæ " 239
et sennæ " 240
statice " 237

Extractum stillingiæ fluidum 238
stramonii folii fluidum 230
tabaci " 230
tanaceti " 233
taraxaci " 232, 248
uvæ ursi " 238
valerianæ 66, 248
valerianæ fluidum 228
veratri viridis fluidum 228
xanthorrhizæ " 232
xanthoxyli " 228
zingiberis " 228, 248
Fat in seeds 157
Fermentation 156
Ferrated collodion 63
Ferri iodidi glycerolatum 63
Ferri oxydum hydratum 103
sesquichloridum 103
Ferric chloride 122
formiate 136
sulphate 122
tannate 139
tartrate of potassa 139
tartrates 139
Ferridcyanide of potassium 129
Ferrous salts 122
Ferrum 102
Fertilizers 157
Ferula erubescens 75
persica 75
Feu belge 70
Fluid extracts 64, 222
Formic acid 136
Formyli terchloridi, spiritus 64
French books 57
Fritillaria imperialis 95
Fucus vesiculosus 98
Fumariraceæ 75
Fumaric acid 138
Fungi 97

Gadus lota 99
morrhua 99
Galactoscope 99
Galbanum 132
true source of 75
Gall stones 172
Gelatin vegetable 156

Gentianaceæ 92
Gentiana lutea 92
German works 53
Germination 155
Glacial acetic acid 136
Glonoin 135
Glucose 167
Glucosides 143
Glue 61
Gluten of wheat 155
Glycerin 135
Glycerolates of extracts 64
Glycerolatum aloës 63
    chloroformi 63
    ferri iodidi 63
Glycyrrhiza glabra 82
Gouty excrescences 172
Graminaceæ 96
Guaiac 133, 142
Guaiacic acid 142
Guanina 169
Guilandina bonducella 83
Guillaya molina 82
Gum and albumen 156
    sugar 144
Gutta-percha and caoutchouc 130

Hæmatoidin 172
Hæmatoxylon campechianum 83
Henna 78
Hepatica 97
Herring brine 100
Hippuric acid 141
Hydrargyrum cum creta 62
Hydrastia 152
Hydrastis canadensis 71
Hydroberberina 152
Hydrochloric acid, purification of 115
Hydrocyanic acid 125
Hydrogenii binoxydum 101
Hypobromous acid 116
Hypochlorite of lime 161
Hyposulphite of lime 121
    soda 118

Impure oxides of iron used in medicine 253
Index 299
Infusions, preservation of 61

Infusions, report on 61
Inorganic substances 157
Internal Revenue Law, on the 260
Invitation to an excursion 32
Iodide of ammonium 119
    calcium 120
    potassium 116
    sulphur 116
Iodine 161
Ipecacuanha 181
Ipomœa jalapa 87
Iridaceæ 95
Iron, action of steam on 122
    impure oxides of, used in medicine 253
    magnetic peroxide of 123
    reduced by hydrogen 122

Jalap 181
Jatropha glauca 79
Jeffersonia diphylla 72

Kelp 98
Kinic acid 140
Kreatinina 170
Kresotic acid 141

Labiatæ 90
Lactose 145
Lactuca sativa 89
Lactucic acid 143
Lard 99
Larixinic acid 140
Laudanum 191
Lawsonia inermis 78
Lead, crystals of 124
    of a copper color 124
Ledum palustra 86
Leguminosæ 82
Lichenes 97
Ligustrum vulgare 94
Liliaceæ 95
Liquidambar orientale 86
Liquor brominii compositus 62
    ferri nitratis 63
        sesquichloridi 123
    plumbi subacetatis 62
Lithia, urate of 137
Lupinus 82

Luteolin 146
Lycopodiaceæ 96
Lycopodium and flour 168
  clavatum 96
Lythraceæ 78

Magnesia 121
  sulphate of 121
Magnesium 121, 163
Magnetic peroxide of iron 123
Maisch, John M., essay on solutions of tartaric acid 204
    sulphuric acid 255
  report of Corresponding Secretary 172
Malate of iron 138
Maleïnic acid 138
Malic acid 138
Malt, extract of 69
Mammalia 98
Manganii binoxydum 103
Manganous acid 122
Mannitan 145
Mannite 144
Marl, extraction of potassa from 256
Marrubium vulgare 90
Maryland College of Pharmacy 173
Massachusetts College of Pharmacy 173
Materia Medica 71
Mayer, F. F., essay on the strychnaceæ 248
  report on the progress of pharmacy 49
Medicated cigarettes 69
Melampyrite 145
Melanthaceæ 95
Melia azedarach 78
Meliaceæ 78
Melilotus officinalis 82
Members elected 20, 21, 31, 35, 40, 42
  deceased 23
  roll of 283
Membership, form of application for 281
Menispermaceæ 73
Menispermum canadense 73
Mercurialina 150
Mercurialis annua 79
Mercury 165
  ammonio-chlorides of 127
Metallic oxides, report on 61
Methylamina 148
Methylic alcohol 133

Milk...... 99
Mineral acids, report on...... 61
waters...... 60, 63
Minutes of the eleventh annual meeting...... 19
Mistura chloroformi...... 70
Molybdic acid...... 125
Momordica charantia...... 76
Moschus Sibiricus...... 98
Musk...... 99
Myricaceæ...... 85
Myrica cerifera...... 85
Myrospermum frutescens...... 83
Myrsineæ...... 90

Narcotina...... 150
Narthecium ossifragum...... 96
Nepeta glechoma...... 90
New York College of Pharmacy...... 173
Nickel...... 164
atomic weight of...... 123
Nicotiana tabacum...... 92
Nigella sativa...... 72
Nitrate of potassa...... 102
Nitric acid...... 158
Nitrobenzole...... 135
Nitrogen in the soil...... 153
Nitroglycerin...... 135
Nitromannite...... 145
Nitromuriatic acid...... 115

Œnanthic acid...... 137
Œnanthylic alcohol...... 134
Oil of Indian hemp...... 70
mace...... 132
peppermint...... 132
rue...... 132
Oils volatile...... 132, 212
Oleaceæ...... 93
Olea Europœa...... 93
Oleum cannabis indicæ coctum...... 70
morrhuæ vesicans...... 70
Ophthalmic ointments...... 68
Opium...... 181
Organic substances...... 166
Oxalate of ammonia...... 137
copper...... 187
ethyl...... 138
Oxalic acid...... 137

Oxycoccus macrocarpus 87
Oxygenium 100
Ozone in plants 153
Ozonium 100

Palmaceæ 95
Papaveraceæ 73
Papaver somniferum 73
Paraffin 130
Parrish, Edward, on the Internal Revenue Law 260
  a Plea for the Handmaiden 271
Pastilli ministrorum 69
Paste, cheap 61
Paullinia sorbilis 77
Peganum harmala 81
Permanganic acid 122
Permanent Committee on Pharmacopœia 42
Peroxide of potassium 116
  sodium 117
Pessaries 70
Petroleum 129
Pharmaceutical stills 38, 207, 210
Pharmacopœia, committee appointed on 42
  resolutions concerning 43
Pharmacy 59
  report on progress of 49
Phenyl 130
Phenylic alcohol 135
Philadelphia College of Pharmacy 173
Phloroglucin 145
Phosphate of soda 118
Phosphoric acid 101, 114, 161
Phosphorus 160
  amorphous 114
  comminution of 113
Physiological chemistry 169
Physostigma venenosum 83
Picis liquidæ plasma 68
Picric acid 141
Picrotoxin 168
Pilulæ 67
Pilulæ copaibæ 67
  ferri 67
  iodidi 67
Pinus 94
  abies 94
  pumilis 94
  sylvestris 94

Piperarceæ........ 85
Piperic acid........ 140
Piper methysticum........ 85
  nigrum........ 85
Plasma picis liquidæ........ 68
Platinum........ 128
Plea for the Handmaiden........ 42, 271
Plumbageneæ........ 90
Podophyllum peltatum........ 72
Poisoning by belladonna........ 74
  bleaching powder........ 102
  Burnett's fluid........ 102
  extract of aconite........ 71
  opium........ 74
Polygonaceæ........ 86
Polygonum fagopyrum........ 86
Pommades, cerates &c........ 61
Pongamia glabra........ 83
Populin........ 146
Potassa from marl, extraction of........ 256
Potassæ bicarbonas........ 117
  bichromas........ 102
  carbonas........ 116
  chloras........ 102, 115
  nitras........ 102
Potassium........ 163
  ferridcyanide of........ 129
  iodide of........ 116
  peroxide of........ 116
Powders........ 60
Prefatory note........ 15
Preservation of infusions........ 61
  syrups........ 62
  volatile oils........ 212
Press, Reuleaux's........ 59
Prizes, the subject discussed........ 35
Procter, Jr., Wm., essay on aconite root........ 196
  fluid extracts........ 222
  still for pharmaceutical purposes........ 207
Professors of the Maryland College of Pharmacy invited to take seats in the meeting........ 30
  University of Maryland invited to take seats in the meeting........ 30
Progress of Pharmacy, report on........ 49
Propionic acid........ 136
Propylamina........ 148
Propylic alcohol........ 134
Protiodide of sulphur........ 116

Ptelea trifoliata 81
Pyocyanin 170
Pyrodextrin 144
Pyroglycerin 135
Pyroxylin 144

Quercitrin 147
Quercus 84
  infectoria 84
Queries continued from last year 47
Queries for 1863, answers to 36
  1864 43
Quinia 150
  sulphate of 182

Radicals, aromatic 130
Ranunculaceæ 71
Report of the committee on credentials 19
  drug market 34, 175
  nominations 31
  progress of pharmacy 34, 49
  scientific queries 34, 43
  specimens 42
  to audit Treasurer's account 35
  corresponding Secretary 172
  Executive committee 21
  President 26
  Treasurer 32
Reptilia 100
Resolutions concerning British Pharmaceutical Association 47
  Pharmacopœia 43
  of salutation and gratulations to the British conference of Druggists and Chemists 48
  tendering thanks of the Association 48
Reuleaux's press 59
Rhubarb 183
Robinia pseudo-acacia 82
Robinin 147
Roll of members 283
Rosaceæ 82
Rottlera tinctoria 79
Rubiaceæ 87
Rubidina 149
Rubidium 118
Rutaceæ 81
Salicylic acid 141
Sanguinaria canadensis 75

Sanguinarina, therapeutical properties of........ 214
Saoria, the source of........ 90
Sapindaceæ........ 77
Saponin........ 146
Sarcosina........ 170
Sarraceniaceæ........ 73
Sarracenia purpurea........ 73
Sarsaparilla........ 184
Scammony........ 184
Scattergood, George J., essay on marl........ 256
Schiness mollis........ 84
Scientific Queries for 1864........ 43
continued from last annual meeting........ 47
Scorodosma foetidum........ 75
Scorpio gabonensis........ 100
Scorzonera hispanica........ 90
Scrophulariaceæ........ 90
Scrofularia nodosa........ 91
Seeds, skinning of........ 61
Seltzer water for fountains........ 70
Semecarpus anacardium........ 84
Senega........ 184
Senna........ 184
Serpentaria........ 185
Silica........ 154
Silver........ 127, 166
chloride of........ 127
nitrate of........ 127
Silvering glass surfaces........ 61
Sinapis nigra........ 77
Silybum marianum........ 89
Skinning of seeds........ 61
Snake bites, remedies for........ 100
Soap, Castile........ 183
Soda, bicarbonate of........ 118
Soda, caustic........ 117
from cryolite........ 117
hyposulphite of........ 118
manufacture of........ 117
phosphate of........ 118
Sodii chloridum........ 103
Sodium........ 162
peroxide of........ 117
Solanaceæ........ 91
Solanina........ 153
Solanum lycopersicum........ 91
tuberosum........ 92
Solutions........ 62

Sorbin........ 146
Spærococcus lichenoides........ 98
Sparteïna........ 149
Special reports and essays........ 196
Species hispanicæ........ 69
Specific gravity of solutions of tartaric acid........ 204
Spectral analysis........ 169
Spermædia clavus........ 97
Spigelia........ 85
Spirits, tinctures and........ 60, 64
Spiritus ætheris compositus........ 190
  formyli terchloridi........ 64
  sinapis........ 64
Squibb, Dr. E. R., report on drug market........ 175
Stannic oxide........ 125
Stanni oxychloridum........ 102
  phosphas........ 102
  tannas........ 102
Starch........ 143
  in seeds........ 157
Stearns, Frederick, essay on æsthetical pharmacy........ 266
Statice latifolia........ 90
Steam, action of, on iron........ 122
  apparatus........ 59
Sterculiaceæ........ 78
Sterculia fœtida........ 78
Still for apothecaries........ 38, 207
  pharmaceutical purposes........ 210
St. Louis Pharmaceutical Association........ 174
Stramonium........ 91
Strychnaceæ, active principles of the........ 248
Strychnia........ 151
Strychnos Tieuté........ 92
Styraceæ........ 87
Subarseniate of strychnia........ 151
Subarsenite " 151
Sulphate of atropia........ 152
  cinchonia........ 183
  quinia........ 182
  sanguinarina........ 219
Snlphites........ 101
Sulphocyanide of ammonium........ 129
Sulphur........ 101, 113, 120, 160
Sulphuric acid........ 113
  arsenic in........ 255
Sulphurous acid........ 113
Suppositories........ 70
Sus scrofa........ 99

Sweet spirit of nitre........ 189
Symplocarpus racemosa........ 87
Synthesis of carbohydrides........ 130
Syringa vulgaris........ 93
Syrup of sanguinarina........ 220
Syrups........ 66
    preservation of........ 62
Syrupus copaibæ........ 66
    ferri carbonatis........ 66
    fuci vesiculosi........ 66
    mannæ........ 66
    terebinthinæ........ 67
    tolutani........ 67

Table of contents........ 13
Tamarix mammifera........ 79
Tannate of zinc........ 139
Tannic acid........ 167
Taraxacum dens leonis........ 90
Tartaric acid........ 138
    sp. gr. of solutions of........ 204
Tartrate of antimony and potassa........ 139
Taxaciæ........ 94
Taxus baccata........ 94
Taylor, A. B., essay on preservation of volatile oils........ 212
Teriodide of sulphur........ 116
Ternitrate of bismuth........ 126
Thallium........ 124
Thomas, Prof. R. P., essay on sanguinarina........ 214
Thymelaceæ........ 86
Thymus serpyllum........ 90
Tin........ 125, 164
Tinctura opii........ 191
Tinctures and spirits........ 60, 64
Toddalea acculeata........ 81
Treasurer's report........ 32
Trianosperma ficifolia........ 76
Trifolium........ 83
Triticum repens........ 96
Troches, drying of........ 69
Trochisci........ 69
    glycyrrhizæ........ 69
        cum ammoniæ muriate........ 69

Umbelliferæ........ 75
Unguenta, cerata, &c........ 68
Unguentum belladonnæ........ 68
    digitalis........ 68

Unguentum hydrargyri 68
nitratis 68
mezerei 68
sabinæ 68
Urate of lithia 137
Urea 169
Urine 170
of herbivora 171
Urticaceæ 84

Vaccinaceæ 87
Vahea senegalensis 93
Valerian 185
Valerianates of iron 137
Vanilla aromatica 95
Vanillaceæ 65
Vegetable and agricultural chemistry 153
drugs 71
gelatin 156
Vegetation 155
Veratrum viride 95
Viridina 149
Volatile oils 132
preservation of 212
Volumetric analyses 168
Volunteer papers 38, 42, 210, 266, 271

Washington Pharmaceutical Association 174
Water 157
Wiegand, Thos. S., essay on still 210
Wine 133
Winteraceæ 72

Xanthina 169
Xanthoxylaceæ 81
Xanthoxylon clava-herculis 81
fraxineum 81
Xyloidin 144

Zea mays 96
Zinc, cyanide of 129
Zinci chloridum 102
Zincum 102
Zingiberaceæ 94

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